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# Pioneers of the Extended-Range Electric Bass

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# MASTER OF MUSIC CULMINATING DOCUMENT:
# PIONEERS OF THE EXTENDED-RANGE ELECTRIC BASS

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# Introduction

Entering the world in the 1930s as thunderously as the tones it produces, the modern electric bass guitar provided a multitude of compliments to any composition. The electric bass guitar is extremely versatile and can add harmony, melody, groove, rhythm, and emotion to any musical work. With these concepts in mind, bassists take on the crucial role of not just an extension of the low end, but also of becoming the foundation upon which the ensemble is built. This combination of sonic notational applications mixed with the percussive rhythmic aspects of articulation is the main reason that bassist act as the glue of ensembles. When the low end of the sonic spectrum is lacking, missing, or not in sync, it is easy for any listener to identify. Therefore, it is critical that the overall importance of the bass and its musical contributions are not overlooked.

Extended-range basses, while much newer instruments in comparison to their orchestral counterparts, provide bassists with the opportunity to play in increased ranges as well as compliment the musical atmosphere surrounding their use. Conceptually, there are a few different variants of extended-range basses and methods with which to stylistically approach each variant. These concepts and styles will be explored in greater detail further on in this paper, but the three main classes of extended-range electric bass guitar variants that will be covered are 1) a six-string bass guitar that is an octave lower than a guitar, 2) the addition of strings above and/or below the standard tuning, and 3) the use of four strings with different gauges which offer a higher or lower system of notes depending on whether the gauge is increased or decreased.

While this paper only discusses the history of the electric bass guitar so far, the future of the electric bass guitar is full of possibilities and is only limited by the imagination of its players and luthiers. Instrumentalists have already begun working on contemporizing basses with even more than six-string ranges, including bassists such as Bill “Buddha” Dickens with his seven-string bass guitar, and Stewart McKinsey with his ten-string bass guitar (Bass Musician 2016, para. 3-6). Victor Wooten has even incorporated MIDI into the bass guitar by way of the FretTraX MIDI electric bass guitar, thereby providing another layer of depth and creativity to the bass’s overall sound (Brown 2017, para. 2). This newer collective of innovative extended-range bassists all stems from the original pioneers who helped bring these new ideas to the forefront of modern bass-playing styles. Multi-string extended-range basses offer unique expansions to the craft of those bassists who choose to accept the challenge of playing these instruments.

Examining the history of the instrument from the origins of the electric bass guitar to the earliest examples of extended-range basses covers a significant timeframe in the chronology of the instrument. This period extends from the early 1930s to the late 1980s. The discussion that follows in this paper is an examination of this time period and examines early electric bass guitar models, the beginnings of extended-range electric basses, pioneers of the first extended-range bass guitar design, transcriptions, and compositional analysis of various lead sheet and solo excerpts. The disc which accompanies this discussion serves as a companion for immediate reference to the subject matter.

## Chapter One: A History of the Electric Bass (1930-1970)

Paul Tutmarc

Over the years, Seattle has provided the landscape for a unique musical scene that has contributed greatly to the music of the American ethos. It also played an important part in the history of the four-string electric bass guitar. Paul Tutmarc was a prominent multi-instrumentalist, performer, and composer in the Seattle area during the 1920s and 30s. He was known for his love of Hawaiian music and composers, as well as his Spanish-influenced guitar playing. Tutmarc was one of the first musicians to design instruments that utilized pickups combined with amplification. This enabled the instrument to project through an amplifier the electronic sounds captured by the pickups in order to give the performer more control of their overall sound.

One of the earliest adaptations of the electric bass guitar was Tutmarc's Audiovox Model 736 electric solid-body bass guitar, released along with the Audiovox Model 936 amplifier in 1936 (Bacon 2016, 8-9). Intended to serve as a compact alternative to the widely used double basses, an early advertisement flyer of the Model 736 Bass Fiddle claimed: "This electronic instrument lends itself especially well to Orchestral use, giving Full Resonant Tones. Made of beautiful Black Walnut, inlaid position dots. Will take the place of three double basses. Compact! Length forty-two inches" (Tutmarc 2020, para. 16). The compact design and use of electronics as a means of amplification made this instrument one of the first steps forward in the electric bass's evolution.

Tutmarc's Model 736 design provided another shift in the bass player's experience through being one of the earliest versions of the electric bass guitar that was performed horizontally rather than vertically like traditional upright basses. Roberts (2001) wrote about the decreased neck length for this bass guitar model—it was thirty and a half inches long—which was "close to the short-scale standard that Gibson and other bass manufacturers later favored," and also noted that "the instrument had a mirror-steel pickguard and a metal bridge" (Roberts 2001, 28). Tutmarc was also able to defy convention by designing his electric bass guitar to include frets. These instruments would provide sixteen frets across an ebony fingerboard. Through the design of a fretted, short-scale instrument that could also be amplified, Tutmarc had provided bass players with a viable alternative to the standard upright bass.

Various other early electric bass guitar models produced during the late 1930s still maintained an upright-based fretless approach while providing the option of amplification. However, these instruments also maintained a size comparable to an upright bass as well as the need to be performed vertically, contrasting with Tutmarc's new compact and horizontal electric bass guitar. While Tutmarc's instrument provided one of the earliest examples of an electric bass guitar that could be performed horizontally, this new concept remained predominately in the Seattle area. Unfortunately, Tutmarc's Model 736 did not go on to have the same commercial success experienced by other eventual mass-created electric bass guitar counterparts.

## Early Manufactured Electric Basses

Gibson also displayed an early curiosity when it came to creating an electric upright bass, introducing one in 1938 (Roberts 2001, 24). Similarly to Tutmarc, Gibson

also designed an array of amplified instruments for Hawaiian musicians. Unlike Tutmarc's Model 736 which was designed to be played horizontally, Gibson's early endeavor was meant to be played as an upright bass. While Tutmarc's bass was a giant step forward in the instrument's development, "This bass didn't herald the advent of electric bass as a viable instrument, as Fender's Precision Bass would do fourteen years later" (Moseley 2004, para. 8). Some distinctive characteristics of Gibson's instrument was its overall scale size of 423/8" or a little under five feet, the inclusion of an endpin, as well as a fretless fingerboard which included linear markings to indicate intervallic spacing (Moseley 2004, para. 5). Overall, the design compares to that of an electrified, guitar-style bodied contemporary to Gibson's Mando Basses, which were essentially an acoustic upright bass mandolin. "The Mando Bass had a two-foot-wide pear-shape body, a round sound-hole, four strings tuned E-A-D-G, a forty-two-inch scale length (the average for a double bass), and seventeen frets" (Bacon 2016, 8). Gibson's early contributions to the concept of the electric bass guitar gave musicians additional options from which to choose, but the upright bass would still maintain its status as the instrument of choice among bass players for the time being.

Another company which began to create a range of electric instruments during this time was Rickenbacker. Just as with Tutmarc's creation of amplified instruments, Rickenbacker created an array of instruments tailored to the genre. Such designs included electric guitars, lap steel guitars, and mandolins, bass viols as well as violins, violas, and cellos with electric capabilities (Rickenbacker n.d., para. 15). Rickenbacker would find their early success through their electric guitars, but their electric basses would not be far behind. Rickenbacker would develop an electric bass guitar but in contrast with the

Gibson model, the Rickenbacker Electro Bass Viol would be fashioned after a traditional fretless upright bass. The design of this bass led to the instrument being dubbed the "stick-bass" in light of it featuring all the aspects of an upright bass without the full hollow-body of a contemporary upright design (Bacon 2016, 7). Due to the responsive nature of the amplification process, the need for a large diaphragm was not necessary to expand the volume of the instrument. An interesting feature of this instrument was that "it could be attached to the top of its amp, and the endpin-to-amp connection also included the output jack" (Roberts 2001, 25).

With World War II on the horizon, many breakthroughs and developmental progress on instruments began to decline as the nation and the world became more involved with the growing call to action for the war effort. Both the nation's workforce and resources would shift to the needs of the war and put the world of instrument development on hold until a few years after the war. As war-essential production jobs became more in-demand, production of nonessential services began to wane. The reduction in workforce and demand made it difficult for much production and development of new technologies in this field to occur. When the war ended in 1945, the nation would begin to return to a sense of regularity. A combination of newer technological innovations and postwar prosperity provided the groundwork for the next step toward a new line of electric basses which could be mass produced.

## Leo Fender

Due to the known challenges that the double bass provided when it came to transportation, intonation, and sonic presence in the ensembles, the early versions of amplified electric basses became a core illustration of ingenuity; however, these fledgling

models certainly had room to improve. Nearly fourteen years after Paul Tutmarc's original electric bass guitar design, Leo Fender would create his prototype for a new design of electric bass guitar in 1950 (Owens n.d., para. 1). Prior to this, Fender began designing and producing instruments throughout much of southern California, particularly steel guitars for the Hawaiian music scene in 1945 (Owens n.d., para. 4). Just as with Tutmarc and Rickenbacker, Fender would also have roots stemming from the production of Hawaiian instruments. In yet another interesting parallel, Fender developed and produced their own line of bass amplifiers to accompany their instruments as well. One such example is that of the Fender Bassman which was "'Especially designed for bass reproduction,' the Bassman had a single Jensen fifteen-inch speaker and a twenty-six-watt tube amp with enough power to produce a reasonable bass sound at low to medium volumes" (Roberts 2001, 34).

Following the successes of the Fender Telecaster guitar, which was released in early 1951, the Precision Bass would soon find just as much preference among bassists as Rock and Roll was starting to rise in popularity (Owens n.d., para. 1). "The instrument would be called the Precision Bass, a name chosen by Leo 'due to the fact that it is fretted and leaves no guess work as to where the notes fall'" (Port 2019, 94). The decline in popularity of Big Band music after World War II led to a rise in smaller ensembles that favored musical styles such as rhythm and blues and boogie-woogie along with country groups during the late 1940s and early 1950s.

In October of 1951, the Precision Bass would begin being mass-produced to help bring the instrument back into the forefront of musical importance (Owens n.d., para. 2). The first design which Fender produced did not resemble the instrument recognized in

the form it is today. Rather, the early Precision Bass would follow a design similar to that to the Fender Telecaster. Fender's website describes the design of the instrument with the following:

> It had a "slab" (non-contoured) ash body with two "horns" (as opposed to the Telecaster's one; this provided greater balance and was subsequently adapted for the Stratocaster), a one-piece twenty-fret maple neck fixed to the body by four screws (despite use of the technically incorrect term "bolt-on"), a single pickup, black pickguard, Kluson tuners, treble-side thumb rest, a string-through-body bridge with a cover (with a mute), and two pressed fiber bridge saddles. It borrowed several features from the Telecaster, including its headstock shape, neck plate, truss rod nut, potentiometers, two domed chrome control knobs, output jack ferrule and strap buttons. (Owens n.d., para. 3)

in 1957, the instrument would see changes in external design such as a contoured body, different style of neck cut at the headstock, a single piece pickguard, and a new pickup layout which have remained visible to this day in the identifiable façade of the modern electric bass guitar (Owens n.d., para. 12).

The Fender Precision Bass ushered in a new approach for bassists to match the volume levels of the rest of the members of an ensemble's electric guitars, horn sections, and drummers. This shift in paradigm was a proactive effort to create an electric bass guitar which could be readily mass-produced that offered not only amplification but also compactness, tonal precision, and notational accuracy. Fender was able to provide the framework for bassists to shift from the "dog-house" upright basses to an instrument which would facilitate bringing the bass guitar to the forefront of music. Thus, a new era of instruments was beginning to expand.

## Electric Basses Throughout the 1950s-70s

Gibson was also tackling more conventional approaches around the early 1950s regarding amplified bass instruments. Gibson would ultimately create another version of

an electric four-stringed bass guitar with the visual aesthetic of a classical double bass. Far more compact in size and more effectively transportable than its 1938 predecessor, this new model of electric bass guitar became known as the Gibson EB-1, which stood for Electric Bass, and was launched into production in 1953. Constructed to rival Fender's Precision Bass, the EB-1 was comprised of a thirty-and-a-half inch short-scale neck, a twenty-fret neck, and favored a pickup placement at the bottom of the neck. Interestingly, this electric bass guitar also included both a strap button to play it horizontally with a strap and an endpin to play it vertically (Rogers 2015, para. 2).

Meanwhile, in Germany, a musical instrument manufacturer known as Höfner was working on an electric bass guitar of their own. Similarly to Gibson, in 1955 Höfner designed electric basses that were also in the style of a classical double bass and would go on to release it in 1956 (Höfner n.d., para. 2). Their design, titled the 500/1, featured a short-scale length of thirty inches and contains twenty-two frets across a maple neck with a rosewood fingerboard. The Höfner 500/1 went on to obtain numerous changes in its internal hardware as the technology advanced over the decades, but the style of the instrument remains the same to this day. Höfner's 500/1 would become a highly recognizable feature of the British Invasion thanks to Paul McCartney of The Beatles.

Rickenbacker would release their first electric bass guitar a mere six years after the release of Fender's Precision Bass with the launch of the Rickenbacker 4000. This model was manufactured with twenty frets across a thirty-three-and-a-half-inch scale neck (Vintage Guitar and Bass n.d., para. 2). Unique to this production of bass guitar, the Rickenbacker 4000 was created with a distinctive through-neck construction; the neck was constructed into the body rather than as a separate bolt-on attachment. Through this

method of building, the instrument obtained a greater level of sustain, increased neck stability, and harmonic frequency response.

Combining the success of these newly-created electric basses, the popularity of the compatibility and versatility of the instrument, and the culture-shift experienced throughout the entirety of the 1960s, the electric bass guitar was beginning to find its place in musical society. It would be during this decade that many studio musicians would turn to the Precision Bass as their go-to instrument when performing on sessions. From James Jamerson of Motown to Donald "Duck" Dunn of Stax to Carole Kaye of The Wrecking Crew, the iconic sounds of the Precision Bass can be heard across a seemingly endless amount of musical compositions during this era. The 1960s also saw Fender's introduction of the Jazz Bass into its arsenal. Becoming available in 1960, the Fender Jazz Bass was considered the "deluxe" version of the Precision Bass (Owens n.d., para. 2). The Jazz Bass was comprised of an arrangement of two pickups—one near the bridge and the other near the neck—which presented more sonic offerings to the performer.

Rickenbacker would also provide updates to its model 4000 bass guitar with the introduction of the Rickenbacker 4001. This model would go on to provide a very distinctive, bright sound compared to the other bass guitar models that were available at the time. In contrast with the Rickenbacker 4000, the Rickenbacker 4001 included an additional pickup. This pickup was installed close to the neck to interrelate with the preexisting pickup from the 4000 which was placed near the bridge of the instrument. The combination of these two pickups similar to the Jazz Bass design greatly expanded on the combination of tones which the pickups could present.

Throughout the 1970s, the world of bass guitar began to see a new form of construction. As the number of companies looking to create new and improved versions of the electric bass guitar expanded, the quality of the instruments began to improve. These newer designs were often tailored to those bassists that were looking to not only customize the look of the instrument but also the sound through the use of different pickup types or even the way the strings would be wound. Alembic Inc. was one of the more prominent companies to take this approach. Throughout the 1970s, Alembic Inc. would provide some of the most uniquely-built customizations on the West Coast. Meanwhile, over on the East Coast, Michael Tobias of Tobias Guitars began to provide another outlet for customizable basses in 1977 as the demand for extended-range basses would begin to rise in the late 1970s (Michael Tobias Design n.d., para. 1).

## Early Extended-Range Concepts

Some of the earliest examples of electric basses which featured extended notational range stemmed from two different companies: Danelectro and Fender. These instruments offered the performer a string arrangement slightly different from the standard four-string tuning of E-A-D-G. Danelectro's UB2 and Fender's Bass VI both took the approach of providing musicians with a six-stringed electric bass guitar, and Fender's Bass V offered an additional string to the standard arrangement.

Danelectro's UB2 six-string bass guitar was constructed just as its description implies. Released in 1956, the UB2 was designed as a baritone guitar and featured a string orientation of E-A-D-G-B-E (Roberts 2001, 52). While the strings were aligned with the notes of a conventional guitar, the UB2 provided the notes to be performed a full octave lower than a guitar. Having an instrument which was similar in design to a guitar

provided ensembles that still performed with an upright bass to use these baritone guitars to double the bass parts. This style of performance became known as “Tic-tac bass” and was commonly found within country music styles and sessions.

Fender would create two models of extended-range electric bass guitar concepts: the Bass VI and the Bass V, released in 1961 and 1965 respectively (Roberts 2001, 64-69). Fender’s Bass VI took the same approach as Danelectro by creating a model of electric bass guitar which maintained design aspects of a standard electric guitar but at a more appropriate scale and performed an octave lower. The design of this bass guitar drew heavily from the design of the Fender Jaguar. It had a three-pickup design complete with a control plate that featured switches rather than knobs and a floating tremolo (a distinctive feature which separated it from the Danelectro design). In contrast, the Fender Bass V would feature an additional string that added to the upper register of the standard bass tuning. These instruments came equipped with a high C string for a string orientation of E-A-D-G-C. However, the close-together string spacings of this instrument would prove to be deterrent for many bassists.

These instruments provided the foundation of extended-range within the realm of electric bass guitar. While the ideas themselves provided an early glimpse of what was to come, there were still roadblocks that needed to be fine-tuned by the musicians that performed on the instruments and the luthiers who designed them. While many bassists would continue to favor the standard four-string models that were available at the time, there were still those who continued the journey of development and discovery in the field of extended-range basses.

## Chapter Two: Extended-Range Electric Basses (1971-1988)

### Important Luthiers

During the 1970s, guitar luthiers began to work more frequently with musicians to further the design of the four-string electric bass guitar. These collaborations provided the opportunity to offer instrument designs with exclusive personalization and creating instruments with unique timbres. Customizations could be applied to both the external construction design and updates to the internal hardware of these new instruments as technological advancements occurred. There are four companies which provide a linear placeholder in the development and creation of extended-range basses: Alembic Inc., Carl Thompson, Ken Smith Basses Ltd., and Fodera Guitars.

Alembic Inc. began their journey in 1969 in Novato, California through the efforts of Owsley Stanley, Ron Wickersham, and Susan Frates. These individuals created the company as an extension of the Grateful Dead's team which provided improvements to the band's sonic capacities. While the team first worked on instrument electronics and multitrack recording, Alembic Inc. would eventually take these concepts and apply them to instrument creation as well (Wickersham n.d., para. 4). "By uniting sophisticated electronics with strikingly original woodworking, Alembic Inc. elevated bass guitar building to an art form, opening the door for dozens of talented luthiers to express themselves in the

creation of beautiful, great-sounding, premium-priced instruments" (Roberts 2003, 12). Alembic Inc. also created custom-built guitars as well as basses, which were built to the same high-quality standards for which the company would become known. The basses Alembic Inc. designed would feature the same attention to detail and were available in scale lengths of thirty and three-quarter inch, thirty-two-inch, and thirty-four-inch designs (Achard 1996, 162).

Carl Thompson started constructing custom-built electric basses in 1974 at his shop located in Brooklyn, New York. He developed notable adaptations of the electric bass guitar family such as the first piccolo bass guitar and the first electric six-string bass guitar (Thompson n.d., para. 1). Thompson's friends initially discouraged him from taking up the trade. "They said, 'We're all playing Fenders. They're okay.' I said, 'It's not that they're okay. I think you guys have just gotten used to playing on them'" (Portugal 2000, para. 5). Thompson ended up not following the advice and would go on to begin his business, bringing some of the greatest advancements of the electric bass guitar in recent history.

Working alongside Stanley Clarke, Thompson designed a bass guitar that utilized a smaller string gauge which would allow the instrument to be tuned an octave higher than the standard electric bass guitar. "Within a few weeks of Clarke coming into his shop in 1974 with the piccolo request, Thompson was confronted with another seemingly peculiar idea when session player Anthony Jackson asked if it would be possible to make a six-string bass" (Bacon 2016, 81). Jackson and Thompson collaborated to create the first models of the six-string extended-range contrabass guitar. Thompson's creations helped to signify the beginning of a new era by demonstrating the instrumental capability

and expressional potential that an electric bass guitar could offer. Thompson would also go on to create customized basses for artists such as Les Claypool and Paulo “PJ” Roberto Diniz, Jr., among others (Thompson n.d., para. 5).

Ken Smith of Ken Smith Basses Ltd. began pursuing the development of unique bass guitar designs in 1978 in New York City while pursuing a career as a performing musician; he has made numerous design changes throughout the years (Smith n.d., para. 4). Smith would also have a hand in furthering the development of extended-range basses by also working with Anthony Jackson in his continued pursuit of a playable six-string contrabass guitar. Vinny Fodera of Fodera Guitars originally worked alongside Smith in New York until he left in 1983 to create his own venture along with Joey Lauricella in Brooklyn (Fodera Guitars n.d., para. 1). Just as with Thompson and Smith, the duo would also work directly with Anthony Jackson to contribute additional revisions of his six-stringed contrabass design.

Each of these luthiers and their companies provided critical steps to the development and production of the extended-range bass guitar and did so in collaboration with bass players who pioneered the instruments in their respective fields. Jackson and Thompson’s collaboration provided the earliest concept of an extended-range bass guitar with low B and high C strings. Jackson also commissioned designs from Ken Smith as well as Vinny Fodera to hone the design goals. Jimmy Johnson partnered with Alembic Inc. to bring about a new five-string bass guitar design with a low B string, which would go on to become the preferred standard of future designers and bassists. John Patitucci used Jackson’s Ken Smith design to bring the extended-range bass guitar into the world of Jazz during his work with Chick Corea and the Elektric Band. With these pioneers and

this timeline in mind, each of these bass guitar designs and their points in history assisted in defining not only the role of the extended-range bass guitar in practice but also in promoting the continued creation and adaptation of newer standards of bass guitar layout configuration.

## The Thompson Six-String Bass

Paving the way for the initial breakthrough of a new ideology of modern extended-range bass guitar design was Carl Thompson. These two formed a critical collaboration to make Jackson's collective ideas of the instrument a reality. Jackson conceptualized the need of a six-stringed bass guitar early on in his career. Speaking to *Bass Player Magazine* in December of 2008, Jackson recalls:

> It was sometime in 1968; I was sixteen and I had been playing the bass guitar for about four years. While practicing with a collection of Jimmy Smith organ trio records, I kept finding myself running out of room while walking—wanting to get down underneath the bottom register and wanting to move to the upper register without feeling like I was going to run out of space. I had tried out the Fender Bass V, which had a high C string, a few years earlier; it was a poorly designed instrument that disappeared quickly, but I remember thinking, "Why didn't they put the extra string on the bottom?" I envisioned Fender as the builder of this new instrument, because that was the world standard then, and I thought, "While we're at it, let's put a string on top and extend the range in both directions." (Jisi 2008, 26)

In 1974, six years after his initial conception of the instrument, Jackson began working with Thompson to discuss this new electric bass guitar design which would provide a brand-new spectrum of potential to the instrument.

In 1975, Thompson delivered Jackson a thirty-four-inch scale Fender-like six-string bass guitar with Jackson's specified tuning scheme of B-E-A-D-G-C, thus creating the first instance of this new instrument, the contrabass guitar. The similarities between Thompson's early designs and Fender basses were mostly in the body design and not in

the spacing between the strings, a feature that Jackson later requested be adapted. As Jackson continued to request changes in design, Thompson also provided a second design which featured a scale length of forty-four inches. However, the design still did not provide Jackson much practicality on the neck of the instrument due to a tight string spacing configuration (Roberts 2001, 134).

Practicality was key to the development of this new instrument but given constraints of materials available at the time, Thompson had to come up with solutions to bridge the gaps. *Guitar Player Magazine* featured an interview with Thompson in 1985 wherein the issue with finding proper pickups while he was designing the first attempted version of Jackson's instrument is discussed with Mulhern, the interviewer:

> His biggest problem was obtaining pickups because there were few companies specializing in custom units, which were needed in order to accommodate the wide string spacing. On the early six-strings, he used a couple of Emmons steel guitar models that were essentially extra-wide standard guitar pickups. He made wooden covers and mounted the pickups in wood. He states, "The sound wasn't perfect—obviously they were intended as guitar pickups—but they worked okay. Anthony understood their limitations." (Mulhern 1985, para. 16)

Thompson continued to design six-string basses using similar approaches to Jackson's scale. "Thompson uses a thirty-four-inch scale for most basses, but he feels that the longer scale improves the intonation and enhances the overall sound, especially in the lower registers" (Mullhern 1985, para. 16). As more and more bassists began to approach Thompson with designs to be commissioned, Thompson tended to keep the scale of his instruments at thirty-four inches unless otherwise requested.

Jackson continued to use both his Fender bass guitar along with his new contrabass guitar in his session work. When utilizing the Fender to achieve a lower range, Jackson tuned his E-string down to the lowest necessitated note. Jackson recalled some of

his earliest instances recording while performing with this technique style saying “One of the first tracks I cut this way was a Diana Ross song called ‘No One Gets the Prize,’ from her album *The Boss* [Motown, 1979]. Another early attempt was the chorus of Chaka Khan’s ‘Love Has Fallen on Me,’ from her album *Chaka* [Warner Bros., 1979]” (Jisi 2008, 32). Techniques such as this were a valid method of obtaining a lower range but were only practical within the range of a whole step. Detuning a string further past that range often reciprocated with an unwanted resounding rattling, which is produced as a result from the string bouncing off the instrument. While Jackson would continue his journey to perfect the design and playability of his contrabass guitar, a similar search for an extension to the lower register of the bass guitar was beginning to be realized on the other side of the nation.

## The Alembic Five-String Bass

While Jackson’s six-string bass guitar was taking place on the east coast, Jimmy Johnson was theorizing a similar methodology of extended-range bass playing on the west coast. Johnson’s father was a classical upright bass player who often used extensions while performing (Bacon 2016, 80). Johnson would use this orchestral approach to range extension and seek a similar production concept to the design of electric bass guitar.

> Johnson reportedly considered making a device that would work like the C extension of an upright, but abandoned the idea when a string manufacturer told him it would be too much trouble to make an extra-long E string. Johnson then settled on the idea of adding a B string. He knew that Alembic had built custom five-string basses with a high C, so he ordered one. After it arrived, he modified the nut and bridge to accept the largest-diameter string he could find (.120), which he tuned to B—and in 1976 the five-string bass tuned B-E-A-D-G was born. (Roberts 2001, 135)

While Fender's Bass V and Alembic's Series II five-string basses utilized a standard string configuration with the inclusion of a high C, Johnson's Alembic modifications instead expanded the lower register of the five-string electric bass guitar with a low B string. Speaking to *Guitar World* magazine in 1989 about the application of the orchestral upright bass extension in relation to application of the electric bass guitar, Johnson stated:

> They usually have an extension on upright basses that goes down to low C. I was trying to figure out how to do that on electric, and my dad said, "Well, there's also five-string basses." They were making them back then, but with a high C, and I preferred the bottom. I don't have a whole lot of desire to go higher than the bass can go. (Resnicoff 1989, para. 15)

In contrast to the Fender Bass V the Alembic five-string consisted of a standard scale length and featured twenty-four frets on the neck of the instrument as opposed to the Fender Bass V's short scale design and total fret count of fifteen. To fit the specifications for this tuning system, Johnson partnered with the guitar string manufacturer GHS to construct the low B string necessary for his vision of a five-string electric bass guitar (Bacon 2016, 80).

The Alembic five-string offers the earliest example of an electric five-string bass guitar containing a standardized scale length and string orientation of B-E-A-D-G. This early Alembic design—as with Jackson's early six-string designs—would feature a narrow string spacing. Later five-string bass guitar designs would incorporate wider neck-layouts to widen the string spacing in order to offset the challenges of performing on an instrument in which the strings were too close together. When considering a standardization of string spacing, it is also worth mentioning that in 1977, Tony Bunn was not far behind Johnson as Bunn collaborated with Paul Reed Smith to create a five-string bass guitar which included a wider neck design than Johnson's Alembic (Johnson

2019, para. 9). With Jimmy Johnson having established the five-string bass guitar with a lower extension into the ever-evolving field of electric bass guitar designs, Anthony Jackson was still also continuing to make adjustments to his extended-range bass guitar designs as well.

## The Smith Six-String Bass

Back on the east coast, Anthony Jackson was still seeking to perfect his contrabass guitar design. During the early 1980s, Jackson began the next phase in his instrumental development. After parting ways with Carl Thompson, Jackson went on to collaborate with another New York-area luthier, Ken Smith. Smith provided Jackson with two new designs. These two versions of Jackson's contrabass guitar, referred to as the "No. 3" and "No. 4" designs, offered Jackson the ability to adjust some of the discrepancies which had arisen from the Thompson design. In December of 2008's edition of *Bass Player Magazine*, Jackson recalled:

> I approached Ken about building my instrument, and he was quite reluctant at first. I finally convinced him, but he felt the Fender spacing I wanted would result in a neck that was too wide and difficult to play; he insisted on a little closer spacing, to which I relented. I got the instrument in December 1981 and it was just comfortable and playable enough for me to stay with for a year and a half. But as testament to me being right, Ken indeed widened the spacing when he began making them in production. Nevertheless, in the fall of 1982, I took a big chance and retired the Fender, choosing to use only my contrabass guitar. The second Smith came in early 1984, which was the last thirty-four-inch-scale prototype; the spacing was right and the sound was improved. (Jisi 2008, 32)

As Jackson continued to try different specifications for his additional commissions from Smith, the most noticeable distinguishing factors between the design which Thompson had produced and that which Smith had designed were the new shapes that each instrument had. The Fender-like body shape of the Thompson "No.1" bass guitar was substituted for a body design which resembled more of Smith's other standard designs.

The main accomplishment pertaining to the Smith design was met in 1981 and resolved Jackson's request for wider string spacing for his six-string extended-range contrabass guitar (Smith n.d., para. 4).

Smith's extended-range bass guitar designs differed from Thompson's such as the inclusion of a wider string spacing that Jackson sought as a must-have in his endeavor. In an interview with *Guitar Player Magazine* in January of 1986, Jackson described the new upgrades to his instrument:

> He's built two for me, both with thirty-four-inch scales. My main instrument is the second one, which differs from the first in that it has a slightly more extreme fingerboard arch. Also, the body is smaller and its primarily walnut instead of maple. The equalizer circuit was designed from scratch according to my specifications, and the pickups are Ken Smiths with ceramic magnets and adjustable polepieces. Ken also succeeded in constructing a neck that is virtually free of dead spots. (Ferguson 1986, 23)

Jackson was still fine-tuning his creation and would start noticing a variety of nuances in the design which he still wanted to adjust and perfect. These adjustments aside, the Smith contrabass guitar design began to capture the imagination of another pioneer to the instrument.

John Patitucci also performed with his own purchased version of Jackson's Smith-designed extended-range bass guitar during his tenure as bassist for Chick Corea, performing on it for his original solo material as well. In 1985, "Patitucci went to Ken Smith's shop in New York City, played a six-string bass, and ordered one, which he played on three Elektric Band albums and his first two solo albums, *John Patitucci* and *On the Corner*" (Roberts 2019, para. 1). With Jackson's six-string bass guitar designs finally beginning to rise in popularity among other bass players, the realm of extended-range basses would begin to flourish. Jackson himself would continue to search for the

perfected instrument that would meet his vision of perfected standards of a six-string electric bass guitar.

## The Fodera Six-String Bass

Continuing to search for his ideal version of the contrabass guitar, Jackson took the next phases of development to Vinny Fodera and Joey Lauricella in 1983 to create the Presentation model concert contrabass (Roberts 2019, para. 3). The team at Fodera offered Jackson the greatest opportunity for mutual collaboration on his commissions. "While Vinny Fodera is a full-time luthier, Joey Lauricella is a working bassist, as well as a builder. 'It's like I'm the hands and he's the ears,' says Vinny. 'Joey knows what will work and what won't work'" (Roberts 2019, para. 6). Since Fodera and Lauricella had worked on Jackson's designs while working for Smith, they were already aware of the concepts that Jackson envisioned to obtain and worked readily along with him to produce the next several models of the instrument. "The first Fodera Anthony Jackson contrabass, a double-cutaway instrument with a thirty-four-inch scale, was delivered in 1984. It was called 'No. 5', because it followed the two built by Carl Thompson and the two by Ken Smith. Five years later, Fodera created 'No. 6', a single-cutaway instrument with a thirty-six-inch scale" (Roberts 2019, para. 4).

This increase in scale size created a noticeable difference for Jackson when compared to the previous thirty-four-inch constructions. In an interview with *Guitar Player Magazine* in 1986, Jackson described the shift as such: "Although thirty-six-inch-scale instruments are noticeably more difficult to play, they sound better—it's the same as going from a baby grand to a nine-foot grand piano; you have a richer sound, but the

weight and size of the instrument increases enormously" (Ferguson 1986, 23). Jackson continued to forge ahead with fine-tuning his creation.

Following the "No. 6" designs, a few more attempts were made before the final product of Jackson's vision became a reality. Discussing these attempts in an interview with *Bass Player Magazine* in 2008, Jackson stated,

> The first Presentation, 'No. 7,' made with decent but not great materials, worked out very well. We did a lot of work on 'No. 8,' replacing the alder body and maple top with an ash body and various tops; 'No. 9' was even better. And then we hit the jackpot with 'No. 10,' which I received on Valentine's Day, 1996, and still play today. (Jisi 2008, 34)

Through collaboration with Fodera, Jackson was finally able to realize his vision of an ideal extended-range contrabass guitar. Jackson and his work alongside luthiers such as Thompson, Smith, and Fodera offered other bassists the chance to explore the sonic tonalities and ranges that the instrument provides. Today, extended-range basses come in all sorts of shapes, sizes, and components. These concepts may not have been as readily available without the earlier developments of the instrument that Thompson, Smith, Fodera, and others, created in collaboration with Jackson, Johnson, and the other musician's instrumental in this development. The pursuit of uniquely identifiable sonic expression continues to be crafted and might only concede when the imagination of both the luthier and the musician reaches its peak.

## Chapter Three: Important Figures of the Extended-Range Bass

### Anthony Jackson: Analysis of "Tropical Butterfly" by Masaru Imada

"Tropical Butterfly" is a composition by Japanese jazz pianist Masaru Imada on his record *Blue Marine*, which was released in 1982. The work features Steve Kahn on guitar, Steve Jordan on drums, Manolo Badrena on percussion, and Anthony Jackson providing backing to the ensemble with his six-string contrabass guitar. This piece was selected for this project to demonstrate the instrument's dynamic and notational range in both its backing and soloistic capabilities in both the lower and upper registers of the instrument.

As the title suggests, a tropical Caribbean flair from Jackson's basslines provide the groove and drive for the rhythmic section of this piece. There is a common thematic motion captured within the musical imagery, especially within the bass part. At the top of the piece, Badrena's percussive conga part sets the stage prior to the rest of the band entering the mix. Overall, the form of the work is a twenty-bar ternary, ABA', form. Containing a tempo marking of 140 beats per minute in a meter of 4/4, the work's A and B sections are both eight measures in length, and the final A' section is only four measures, half of the first A section's theme. The introductory hits with which the full ensemble enters serve as the turnaround back to the A section coming out of the B section.

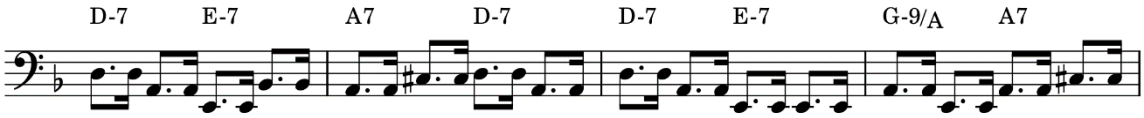
This piece features the bass guitar as the main melodic focal point during the piece's A sections. A slightly distorted tone has been added to the bass to give it a greater

presence in the mix. This effect is taken away during the B sections and backing under the solo sections as well. The B sections of the piece change to allow the guitar to musically respond with the melody while the bass reverts to a backing role. This conversation between the two instruments offers a duality to the motion and timbre of the work.

In the recording, Jackson is the first to perform a solo over the form of the piece. A full transcription of Jackson's solo can be found in Appendix B. In measure 1, Jackson begins his solo by first emphasizing the minor seven of the D minor seven chord, C, and descends through a G Dorian scale. In measures 2 through 6, Jackson shifts to utilizing notes within the D Dorian scale. Within this section, Jackson performs sixteenth note phrases lasting an average of four beats in length. Jackson shifts the tonal center again to an arpeggiated D minor figure during measures 7 through 9. It is here that Jackson also changes to eighth note phrasing. During measure 10, Jackson reinforces G minor by alternating between the open G-string and the fourth, fifth, and sixth scale degrees prior to descending with a B-flat Lydian scale in measure 11, again utilizing sixteenth notes to play his longest phrase of the solo. Jackson arpeggiates then descends to resolve on the third of the D seven chord, F-sharp, in measure 13. During measures 14 through 17 Jackson performs another ascending arpeggiation and then descends it again throughout this phrase. Through measures 18 and 19, Jackson plays a stylistic motif which embellishes a harmonic minor scale. This particular motion resolves on the fifth of the D minor seven chord. Jackson completes his solo by embellishing the descending line, D, C, B-flat, A, that occurs during the final A sections of the piece.

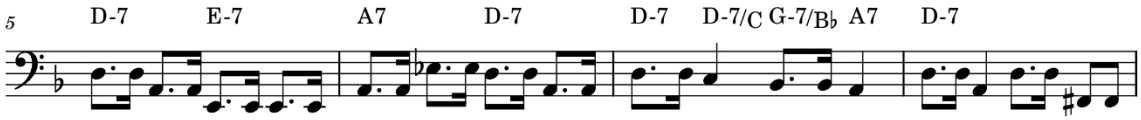
Examining Jackson's approach to walking bass shows some consistent recurring themes. Walking bass can be defined as a progression within the bassline wherein the performer approaches their notational choices with a combination of stepwise or arpeggiated motion that is relative to the accompanying chord structure. As seen in transcription Example 3.1, during the guitar solo comping transcription in Appendix C Jackson mainly adheres to beginning each chord with the root and playing the fifth of the chord on the subsequent beat. Occasionally, he emphasizes the return to D (the root of the A section) with an approach from the half-step beneath (C-sharp) to create a brief tension and resolution.

Example 3.1. "Tropical Butterfly Figure 1: Guitar Solo" measures 1-4.




In Example 3.2, Jackson also approaches the root from the half step above, or E-flat. The use of alternating between the root and the fifth with a half step approach to the root of the next change occurs again in the B section. However, this section contains fewer chord changes so through keeping the notational improvisation at a minimum, Jackson conveys a slightly different tonal feel from the A section.

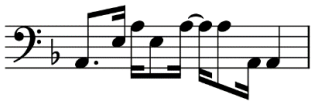
Example 3.2. "Tropical Butterfly Figure 1: Guitar Solo" measures 5-8.




Jackson navigates the $V^7$ chord in Example 3.3 by adding the most rhythmically active motion so far to aid in signaling the return to the final half A section. Jackson can also be seen maintaining the descending D, C, B-flat, A figure which occurs in the

seventh measure within each full A section (or the third measure of the half A section) measures 7 and 19 of Figure 1. Jackson also includes the rhythmic hits on the root of the piece to signal the end of the form.

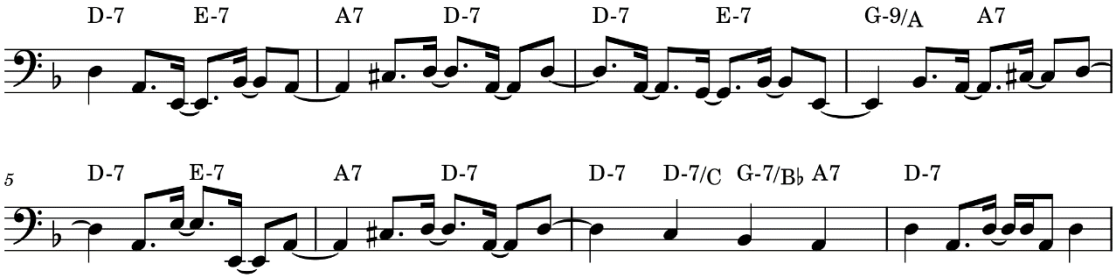
Example 3.3. “Tropical Butterfly Figure 1: Guitar Solo” measure 16.



Creating different motions underneath a soloist without overshadowing the solo is one of the delicate balancing acts that a bass player should be able to offer. Jackson demonstrates this ability throughout the synth solo, as displayed in “Tropical Butterfly Bass Comping Figure 2: Synth Solo,” located in Appendix C. To offer a sonic contrast from the walking bassline played under the guitar solo, Jackson instead offers a new rhythmic device. Through the first A section of the synth solo, Jackson performs in a tumbao-style rhythmic pattern, still emphasizing the root and the fifth. As demonstrated in Example 3.4, due to the shift in rhythmic pattern, Jackson incorporates a combination of half step approaches to the root as well as leaps from the fifth of the chord to the root to accentuate the chord changes. Notational and rhythmic approaches to the B section of the synth solo remains comparable to the B section of the guitar solo, reverting between the root and the fifth of the chord for the first six measures, seen in measures 9 through 16 of “Tropical Butterfly Bass Comping Figure 2: Synth Solo” located in Appendix C. This occurrence contains two measures of improvised fills to again emphasize the return to the final half A section. Remaining consistent, Jackson returns to the tumbao-style rhythmic pattern for two measures before closing out the solo with the descending D, C, B-flat, A line in measure 39 and the rhythmic hits which signal the end of the section in measure 20, similar to the ending pattern of the guitar solo. Jackson demonstrates the

instrument's dynamic and notational range with this piece and is able to do so without overpowering any aspect of the ensemble or causing distraction.

Example 3.4. "Tropical Butterfly Figure 2: Synth Solo" measures 1-8.




Anthony Jackson: Analysis of "If It's Magic" by Michele Hendricks

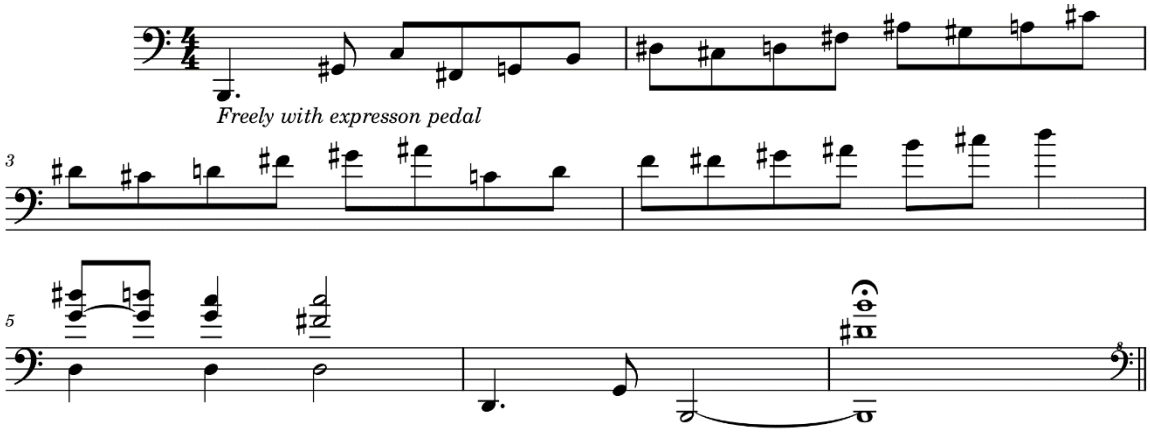
"If It's Magic" is a composition originally written and recorded by Stevie Wonder, which was released on his album *Songs in the Key of Life* in 1976. This version of the piece is a cover by Michele Hendricks, performed as a solo vocal with Anthony Jackson playing his six-string contrabass guitar as an accompaniment. Hendricks's version of the piece appears on her second album *Keepin' Me Satisfied*, which was released in 1988. Complementing each other in a variety of fashions, the result is a magnificent duet between solo voice and electric bass guitar. Jackson's approaches to accompaniment allows Hendricks's vocal stylings to shine through as the range of the vocals complements the range within which Jackson performs. This piece was selected for this project to demonstrate the capabilities of the six-string bass guitar as an instrument that can be applied as an accompaniment in addition to also being a rhythm instrument.

Tonally, the first comparison that can be drawn between Wonder's and Hendricks's version is the key center. Whereas Wonder performs the song in the key of E major, Hendricks and Jackson perform the piece in the key of C major. This choice could

be due in part to highlight Hendricks's alto range as well as offering a more logically efficient location for Jackson on the fingerboard of the bass guitar with which to accompany. Lyrically, a more subtle difference between the two works can be found within Hendrick's delivery of the lyrics in certain instances. Wonder begins the opening lyrical phrase "If it's magic, then why can't it be everlasting," versus Hendricks's "If it's magic, why can't we make it everlasting."

Just as with Wonder's version, the accompaniment opens the piece in Hendricks's version. Rather than Wonder's harp accompaniment, however, Jackson provides the accompaniment on his contrabass guitar in this arrangement. As notated in Example 3.5, Jackson's introduction for the piece offers an arrangement which is unique to the work. In this example, Jackson utilizes an expression pedal to create volume swells for each of his notes. Using this effect provides another unique dynamic to the performance and demonstrates the accompaniment capabilities of the contrabass guitar and of Jackson.

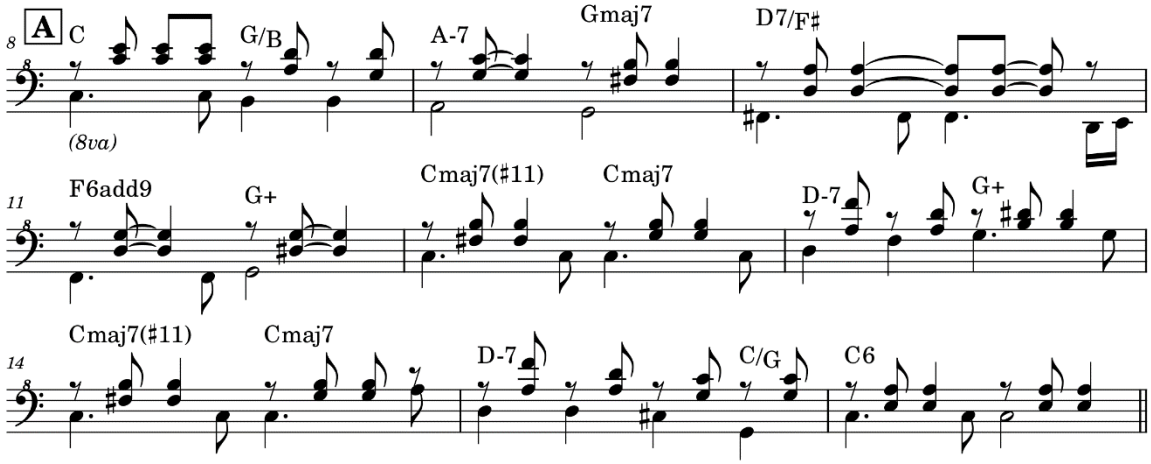
Example 3.5. "If It's Magic" measures 1-7.




Jackson performs a chordal accompaniment which contains basslines played alongside dual-note chords that emphasize the chordal framework, notated in Example 3.6. This approach remains consistent throughout the verse segments of this arrangement.

The C-sharp, which occurs in measure 15 of the example, is applied as a tritone substitution leading from the D minor seven chord on beats one and two to the root on the downbeat of measure 16. Other instances of Jackson emphasizing tritones can be found in the roots of the chordal shapes throughout the transcription (located in Appendix D) particularly on beats three and four in measures 15, 20, and 42. These moments of suspension and release add to the intricacies which Jackson supplies in the accompaniment to provide motion.

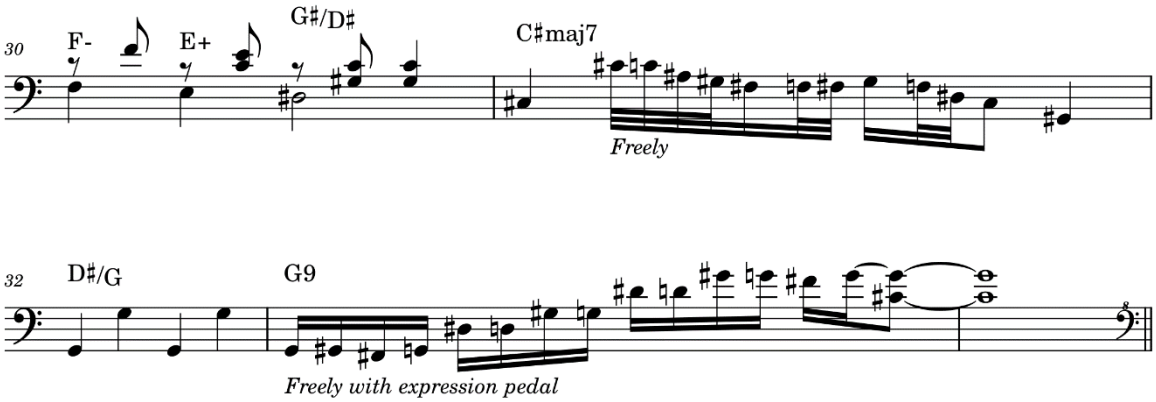
Example 3.6. “If It’s Magic” measures 8-16.




During the first rendition of the chorus, Jackson maintains this root-chord approach in his accompaniment. As displayed in Example 3.7, however, Jackson improvises stepwise linear motion during measure 31 to underscore the D-flat major seven. Jackson performs the full notational range of a D-flat major scale’s progression with pauses on the root, the fourth, and the fifth of the scale, then again on the root. The A-flat in beat four of measure 31 is utilized as a half-step approach to the G nine chord. During the linear progression of measure 33, Jackson begins by performing a tonal encircling of the root ascending through the root and fifth of the chord with the half-step

approaches. Jackson finishes the phrase on the root with a sustained flatted fifth, the G and D-flat, to build tension before entering the next verse.

Example 3.7. “If It’s Magic” measures 30-34.




When examining the arrangement of the work, the form remains nearly consistent to the original until the very end. Where Wonder transitions into the final chorus vocal motif with the addition of harmonica over a layering of the verse theme, Hendricks and Jackson maintain the half-chorus structure. At this point, Jackson performs a linear run around the root before resolving the piece. Another example of the uniqueness of this cover arrangement is the push and pull of the tempo and the interplay between vocal anticipations and accompaniment. This rubato feel can be heard throughout the work especially between verses and choruses, as well as moments like the lyric “As posing pictures with a smile.” Within Jackson’s accompaniment, he pauses his chord choice on beat four of measure 41, almost as if posing for a picture himself.

Jackson performs an exemplary exhibition of the extended-range bass guitar’s capabilities as an accompanying instrument. Through the emphasis of chord tones, the instrumentation of the accompaniment provides an apt foundation to Hendricks’s melodic stylings. By emphasizing the chord factors on the downbeats and complimenting them

with other notes of the chord, the sonic qualities are akin to that of a pianist's arrangement.

Jimmy Johnson: Analysis of "View From Seventh Heaven" by Film & the BB's

"View From Seventh Heaven" is a composition by Jimmy "Flim" Johnson, Bill Berg, and Billy Barber that was released in 1978 on their self-titled debut album *Flim & the BB's*. The work features Barber on piano, Berg on drums, Johnson on his Alembic five-string bass guitar, and Dick Oatts as a guest saxophonist. This work was selected for this project due to the piece being from Johnson's first album with Flim & the BB's and how it offers a look at how he composes for the instrument, especially since he is playing the five-string electric bass guitar on this original work.

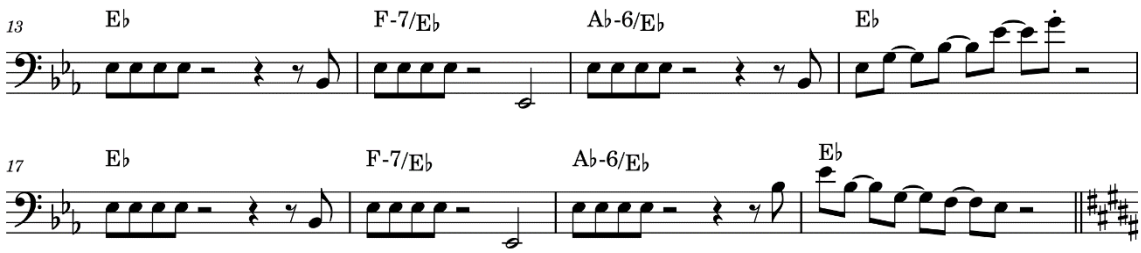
From a tempo perspective, the piece was not recorded to a click track. This enabled the musicians to play in a style which resulted in the tempo progressively increasing throughout the duration of the piece. This is evident by gathering tempo markings from the start of each time the form repeats. The following tempo markings are in 3/2 cut time. At the top of the piece, the tempo marks in at the half-note equaling 130 beats per minute; when the form repeats the tempo has risen to 134 beats per minute. During the final performance of the A' section, the final tempo marking of the piece has increased again to the concluding speed of 137 beats per minute.

Overall, this piece follows an AABAA' song form. when analyzing the A sections, they will be broken down in this context to an ABABCABB' form to provide ease of analysis, explanation, and context. This is due in part to the distinction of features both rhythmically and harmonically within the A sections. The piece begins with an eight-measure piano introduction and a sixteen-measure A section. Following this is a

twenty-three-measure B section which contains the most harmonic movement, the solo section or C section, and the final A and B sections close with a B' section which spans twenty-four measures. This piece's solo section is performed freely without regard to a certain length or form and is characterized by the Oatts's forty-measure saxophone solo and Johnson's thirty-two-measure bass solo.

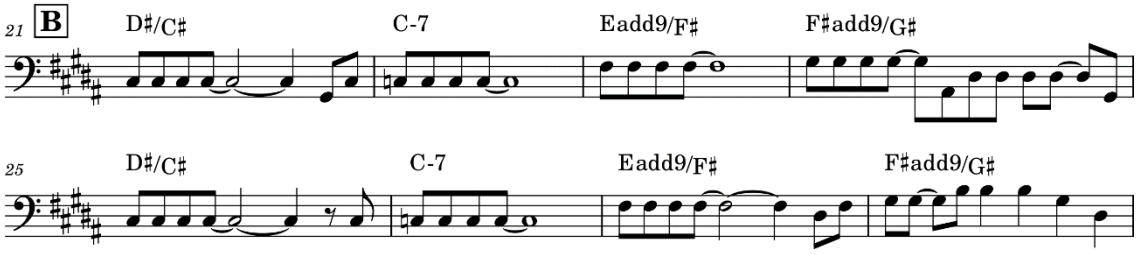
Compositionally, the work begins with a repeated four-measure piano introduction over the opening chord progression. Following this introduction, the drums and bass guitar enter, thereby beginning the first measures of the A section. The saxophone enters in the fifth measure of the A section and provides the thematic material over the next eight measures. As seen in measures 16 and 20 of Example 3.8, Johnson maintains the note of E-flat to emphasize the root in the E-flat chord, the minor seventh in the F minor seven over E-flat chord, and the fifth of the A-flat minor six over E-flat chord. The emphasis of the E-flat in the inversion of the A-flat minor six chord provides tension as the E-flat in the bass sustains alongside the F in the piano chord. Johnson also provides an arpeggiated run on the offbeats to emphasize the tonic chord in both an ascending and descending manner. This concludes the two subsets of eight-measure phrases, one without the saxophone melody and one with, that are found within the A section.

Example 3.8. "View From Seventh Heaven" measures 13-20.



The twenty-three-measure B section also can be broken down into three subsets. Within this example, the first eight measures of the B section also contain a similar rhythmic pulse like the A section, but the saxophone shifts to a rubato style. During the B section, Oatts plays with more fluttered tones, bends, and embellishments to the melody. Meanwhile in the rhythm section, the harmony shifts to a new tonal center and the rhythmic structure begins to expand and develop during this section. Johnson, Berg, and Barber all can be heard playing with a level of intensity which differs from that of the A section. Following the thematic and harmonic shifts of this section, Johnson maintains a similar rhythmic approach of a four eighth-note pattern similar to the A section. In this first subset of the B section, however, Johnson sustains the final eighth-note of each measure as opposed to the A section, as seen in Example 3.9.

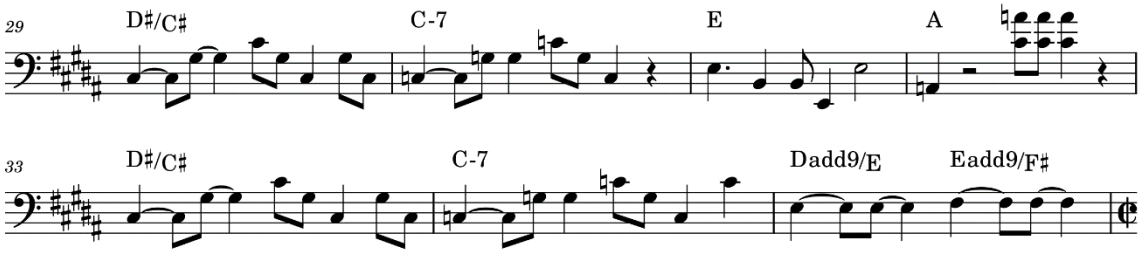
Example 3.9. “View From Seventh Heaven” measures 21-28.




The second set of seven measures showcases more thematic materials from the saxophone; however, during measure 32, the keyboards and bass guitar offer a playful interaction to the melodic content as well before returning to the section’s up-tempo drive. While Barber increases rhythmic intensity in his piano phrasing, Johnson begins to reflect the increase in his bassline as well. As shown in Example 3.10, Johnson turns to arpeggiations of the chord voicings between the root and fifth in contrast to the first eight measure subset of the B section. During measure 32, Johnson also demonstrates an

inversion of the A chord, playing the C-sharp as well as the A before returning to the descending chromaticism of the next two measures. The final measure of Example 3.10 serves as a IV-V progression to the tonic of the next section. The third and final eight-measure segment of the B section features the piano. The melodic focus shifts to a cut-time suspension theme within the piano accompaniment, which becomes the musical feature for the remaining measures of the B section.

Example 3.10. “View From Seventh Heaven” measures 29-35.

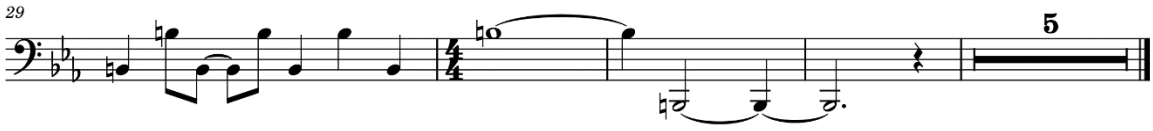



After the A and B sections are performed twice, the solo section begins following a single hit from the ensemble. The drums continue to provide rhythmic foundation, but aside from that initial hit from the ensemble, there is no other source of harmonic backing other than the notes which the saxophone plays during the first solo break. The saxophone solos over a forty-measure period before the thirty-two-measure bass guitar solo, which unlike the saxophone solo is accompanied halfway through by a synth section providing harmonic support.

An example of an early instance of the low B string in application is found tied between measures twelve and thirteen during the bass guitar solo. Here Johnson completes a solo phrase and performs an E-flat on the low B string as a resolution to the phrase. The low B string is again performed at the end of the solo where Johnson concludes his phrase on the lowest pitch on the instrument, the B itself, seen in Example 3.11 measures 31 and 32. The entire transcription of the bass guitar solo can be found in

Appendix H. The last A section follows the bass guitar solo. During the final B section of the piece, the rhythmic activity expands upon the final piano segment of the B section to segue into a gospel-styled twenty-measure outro before concluding on a set of hits relevant to the rhythmic structure of the segment.

Example 3.11. “View From Seventh Heaven Bass Solo” measures 29-37.



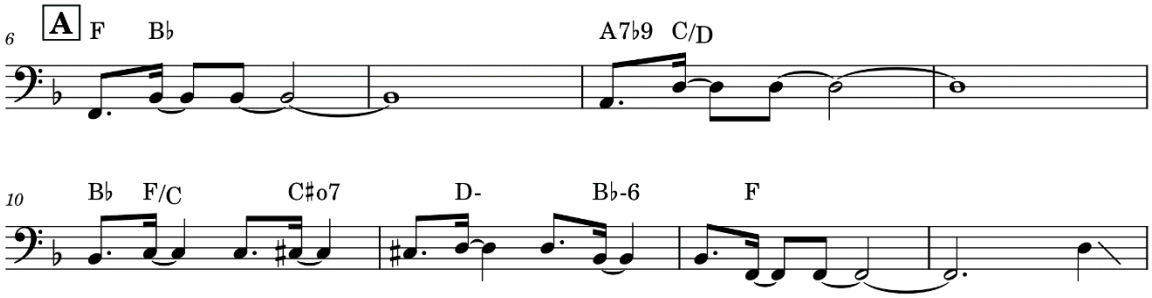

Jimmy Johnson: Analysis of “Thunder And Birdies” by Flim & The BB’s

“Thunder And Birdies” is a composition by Jimmy “Flim” Johnson, Bill Berg, and Billy Barber that was released in 1983 on their second album *Tricycle*. The work features both Barber and Berg on piano and drums respectively as well as Johnson on his Alembic five-string bass guitar. This piece was selected for this project to examine Johnson’s soloistic capabilities as well as his use of tonal effects such as false harmonics on the instrument during the solo section of this piece. Flim & the BB’s also were able to break ground in a new avenue of recording with this album. It is noted as being one of the first direct-to-disc recordings and the second ever commercially-available digital recording in the United States (Berg, Barber, Johnson Liner Notes).

Similar to “View From Seventh Heaven,” this piece follows an AABA' form style. Due to the distinction of features both rhythmically and harmonically within the A and B sections, the analysis of this piece’s sections will be broken down in this context to an ABABCDAB' form to provide ease of analysis, explanation, and context. Berg begins the piece with an eight-measure solo drum pattern to establish a tempo of 135 beats per minute. Johnson and Barber enter thereafter to begin the sixteen-measure theme in the

key of F major in the A section. The melodic content of the work exists between the piano and the bass guitar. Due to this work only being performed by the three musicians, Berg supplies the melody alongside the harmonic context as well. As displayed in Example 3.12, Johnson performs the melody of the A sections throughout the duration of the work. Occasionally, Johnson provides improvisations during the sustained segments of the section. Specifically, quarter note pulses are utilized in measures 44, 46, 48, 134, 136, and briefly on beats one and two of measure 131. Johnson also performs an ascending sixteenth note feature based off a F pentatonic scale starting on the A as an improvisational embellishment in beats three and four of measure 132. These examples can be viewed in Appendix G.

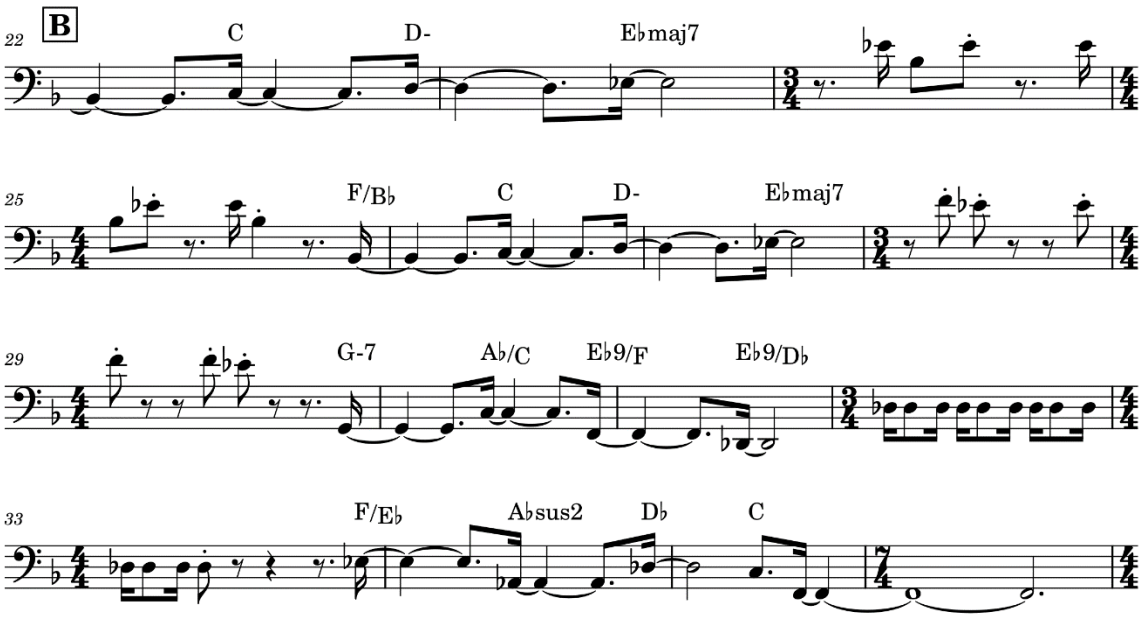
Example 3.12. “Thunder And Birdies” measures 6-13.




The fifteen-measure B section offers contrast to the A section sonically, dynamically, and rhythmically by reducing the overall volume of the instrumentation. As opposed to the hard-striking timbres of the A section, the phrases are performed softer and more legato. Berg also changes from using the full kit to mainly light cymbal rhythmic patterns within the tempo markings, and Barber’s tone adjusts from the piano to a Fender Rhodes tone. Soaring above the ensemble during the second and third renditions of the A section, a string synth pedal tone also appears as an extra layer to add greater intensity to the contrast between the A and B sections. This section also contains an

intricate arrangement of time signature changes which are needed to capture the anticipatory pulses of each phrase. There are nine beats separated into a 5/4 measure and a measure of 4/4 that preceded the B section. The B section itself begins with two measures of 4/4, followed by a measure of 3/4. This rhythmic pattern is then repeated, but this time the phrase contains three measures of 4/4 which preceded the 3/4 measure. After another three measures of 4/4, the section closes with a measure of 7/4 before entering the C section. Meanwhile, Johnson maintains the root of the chords and offers brief improvisation between each iteration of the two-measure harmonic progression. For example, these can be found in measures 24-25, 28-29, 32-33, 55-56, 59-60, 63-64, 143-144, 147-149, and 151-152 in Appendix G. As seen in Example 3.13, Johnson takes advantage of the duration of the E-flat major seven chords within the B sections as a location to insert the improvised figures. Within this specific example, Johnson alternates between the root and the fifth of the chord during measures 24 and 25, and between the ninth and the root in measures 28-29 within Example 3.13.

Example 3.13. “Thunder And Birdies” measures 22-36.



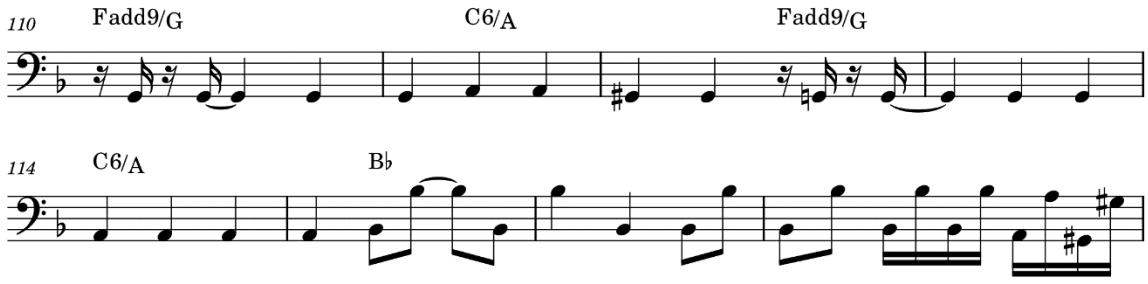
Following the drum intro at the beginning of the piece, the A and B sections are performed sequentially and then repeated. The solo section, or C section, follows the second rendition of the B section immediately thereafter. The solo section begins by a drum set up of four measures before the bass guitar begins to solo for thirty-four measures. During the bass guitar solo, Johnson applies a variety of techniques to provide sonic variance to the motion of his performance. It begins with a segment of sixteenth note plucking which alternates between a G and an E-flat, indicating a major third. On beat four, Johnson occasionally plays the fourth, A, and in one instance in measure 10 of the solo, the fifth, B-flat, is played on the "and" of beat one. Artificial harmonics are also used in Johnson's solo, particularly in the solo phrase occurring in measures 16-20 of the solo transcription. From a technique perspective, the remaining performance of the solo reverts to straight-toned linear concepts and resolves in multiple sixteenth note pulses to signal the transition into the next section. The entire solo transcription can be found in Appendix H.

The solo is performed over a sustained synth tone as the only harmonic focal point, similarly to "View From Seventh Heaven." The resolution of the solo section is followed by newer thematic material led by a driving piano chordal melody, which provides the piece's D section. This is the only instance of this thematic material in the entire piece. The nineteen-measure D section follows the bass guitar solo but begins at the point in which Johnson plays a descending chromatic figure over two measures as an introductory transition.

As seen in Example 3.14, this harmonic figure is the section's main harmonic progression. Johnson demonstrates more chromaticism in his bassline in measure 117 of

the example. The melodic context of this section is located within Barber's upper voicings of his piano part. Subsequently, the C and D sections of the work return to the A section and provide resolution on the conclusion of the B section as the piece resolves. However, this version of the B section is considered B'. This is due in part to the presence of additional material within the same tonal contextualization embellished amongst accompanying chordal adjustments resulting in an extension of the harmonic phrasing. Upon the final chordal V-I resolution, the piece fades out, sustaining on the tonic F chord until the fade completes.

Example 3.14. "Thunder And Birdies" measures 110-117.




John Patitucci: Analysis of "Got A Match?" by Chick Corea Elektric Band

"Got A Match?" is a composition by Chick Corea, John Patitucci, and Dave Weckl that was released in 1986 on the debut album of Chick Corea Elektric Band, eponymously titled *Chick Corea Elektric Band*. The work features Corea on the Fender Rhodes-toned MIDI synthesizer, Weckl on drums, and Patitucci on a Smith/Jackson six-string bass guitar. This piece was selected to demonstrate how the extended-range bass guitar can be used in an up-tempo setting as well as its soloistic capabilities. Clocking in at 300 beats per minute for the duration of the piece, "Got A Match?" contains much to offer the listener as well as the performer.

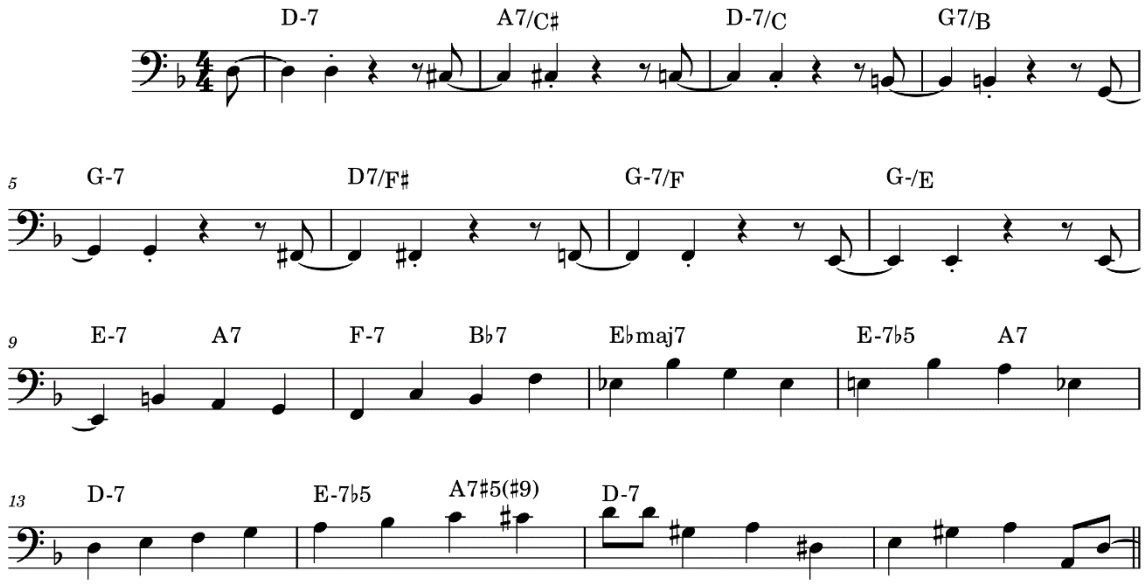
Examining the lead sheet reveals that the melody of the work itself is not particularly long. The entirety of the melody is performed over sixteen measures in and around the key of D minor and can be broken into two portions; the A section contains a descending half step motion every measure for the first eight measures, and the B section contains a series of ii seven – V seven progressions that return to the tonic key center of D minor. A full transcription of the work can be found in Appendix I. The ensemble expands on the tempo of the form by integrating an engaging arrangement for the work. Throughout the piece when the main form is being performed, the ensemble repeats the A and B forms twice thereby doubling the length of the main melodic content of the form to 32 measures in total.

Opening the piece, Corea provides a sixteen-measure introductory section prior to the entrance of the first A section, along with Weckl providing an equally fast-paced rhythmic foundation. Patitucci enters at the beginning of the first A section by playing the melody of the A and B sections along with Corea. During the second execution of the A and B sections, Patitucci changes both his dynamic and approach from performing the melody to performing the walking basslines. Meanwhile, Corea continues the repeat of the form on the melody with additional embellishments to make the melody his own. Full transcriptions of Patitucci's walking bass approaches are notated in Appendix K within "Got A Match?" Figures 1, 2, 3, and 5.

Throughout the performance of the piece, Patitucci differentiates his basslines between the A and B sections. As noted in Example 3.15, Patitucci approaches the descending chromatic lines within the A sections with an anticipated pulse rhythm which emphasizes the root of each chord. This is greatly contrasted by the B section in which

Patitucci incorporates a full walking bass pattern to this second eight-measure section. This is exemplified in measures 9-16 of Example 3.15.

Example 3.15. “Got A Match? Figure 1” measures 1-16.

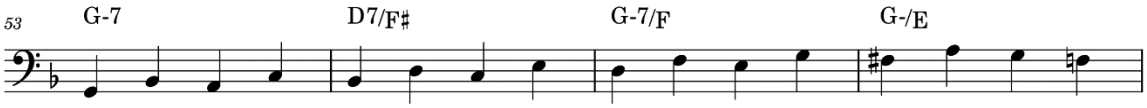



“Got A Match? Figure 1” in Appendix K, notates Patitucci’s walking bass transcription which is performed during Corea’s solo melody-focused performance sections. “Got A Match? Figure 2,” notates the walking basslines performed underneath Corea’s solo over three repetitions of the piece’s binary form. During the first repetition, Patitucci performs his walking bassline with a few different approaches. First, during the first four measures of “Got A Match? Figure 2,” Patitucci utilizes arpeggiations to achieve the form’s goal tones and uses some stepwise motion to reach an approach tone to segue into the next four measures.

In measures 53-56, Example 3.16, Patitucci’s walking bassline ascends in thirds across the chord changes before descending in stepwise motion to the next section. There is a return to arpeggiated motion until the final D minor seven chord, measures 63-64,

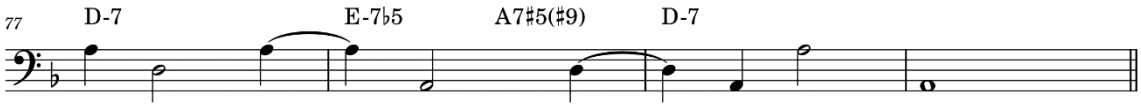
which contain more descending stepwise motion with a half-step approach tone to circle the root of the D minor. Through this first performance of the form under Corea's synth solo, Patitucci keeps his walking basslines within a two-octave span. The highest note in bass clef is an E above the staff and the lowest is the E beneath the staff.

Example 3.16. "Got A Match? Figure 2" measures 53-56.




For the second iteration of the form under Corea's solo, Patitucci uses more chromaticism within his walking bassline. In measure 67 of "Got A Match? Figure 2," Patitucci performs his widest notational jump of the entire piece. The technique in this measure exemplifies the use of the open C-string to make the notational intervallic jump of a major nineth, C above the staff to the D located five ledger lines above the staff. It is this intervallic distance that gives this section a wider notational range than that of the first section, spanning an E below the staff to a D-sharp an octave above the staff. Measures 77-80 demonstrate Patitucci adding a displaced half-note embellishment to signal the da capo into the third performance of the form under Corea's solo, Example 3.17.

Example 3.17. "Got A Match? Figure 2" measures 77-80.




The final section of "Got A Match? Figure 2" begins on the lowest note of the piece, the open low B string, the B beneath the bass clef staff, ascending chromatically. Patitucci tends to favor more linear motion for the first eight measures of this final section of this figure and arpeggiated figures within the section's second eight measure set.

This is followed by the bass guitar solo, which can be found in Appendix J. Beginning his solo, Patitucci performs the first solo phrase with an arpeggiated triplet figure off an arpeggiation from the nineth of the D minor seven over C chord, before descending in a dotted quarter note pattern over a six-measure phrase. This is countered by the following two phrase's eighth-note patterns over the B section's eight measures. During the second solo form, Patitucci again performs a short phrase, this time emphasizing the nineth of the A seven over C-sharp chord. Again, returning to a dotted quarter-note centered phrasing scheme, Patitucci underscores descending thirds and resolving on the root of the G minor over E chord.

It is in this second B section that Patitucci begins to expand his notational phrase length as he continues to underline the third and nineth scale degrees within his phrasing. The third solo segment offers the most space, as there are four measures which contain a whole rest. Beginning on the fifth of the A seven over C-sharp chord, or E, Patitucci repeats the note until it becomes the nineth of the D minor seven over C chord in measure 35 of the "Got A Match? Bass Solo" transcription. The fourth solo segment sees an additional return to the dotted quarter-note figure, particularly within the B section of this phrase. During the fifth solo segment, Patitucci begins to perform in the upper register of the instrument to begin the A section, specifically in measures 65-68. This is followed by a return to straight eighth-note linear motion; however, this segment's B section sees Patitucci return to the upper register a second time during the final five measures.

Through the final rendition of Patitucci's solo section, there is a repetitive three note approach that includes an open G string included as well. This three-note pattern along with the open G string, slowly descends in half step increments until the solo

resolves following a linear progression and emphasized by a D minor seven, a C nine, and a return to the D minor seven chord. Patitucci closes out his solo with a slide, ranging from the D below the staff up an entire octave.

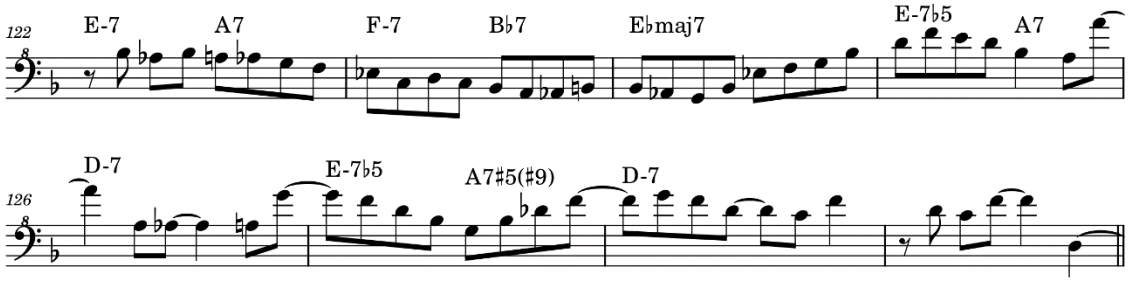
"Got A Match? Figure 3" in Appendix K, notates Patitucci's walking basslines for Corea's sixteen-measure solo, which begins after Patitucci concludes his solo. After descending an octave on the root, D, Patitucci performs his walking bassline on the low B string for the longest duration during measures 97-100 to begin this section. During measures 100-108, Patitucci returns to performing his walking basslines with arpeggiated motion alongside chromatic approach tones which are resolved on the following measure's downbeats. Patitucci closes out this section in the same way he began: by implementing an ascending chromatic passage to close out this iteration of the form.

"Got A Match? Figure 4" in Appendix K, notates the soli motifs which Patitucci and Corea perform in unison over Weckl's drum solo. Weckl solos through three full progressions of the form while Corea and Patitucci overlay quick, unison eighth-note motifs. This soli section occurs during the first and third repetitions of the form during Weckl's solo. The phrasing begins with an arpeggiated motion and encompasses various goal tones through emphasizing the fifths and thirds on the downbeats of the phrases, giving this section a unique tonal timbre. The rhythmic interpretation of the first phrase of measures 113-116 is repeated in the new harmonic context of measures 117-120. This new context is provided with a variant which can be found within the latter measures of the excerpt.

The motion found within Example 3.18 provides both harmonic and rhythmic juxtaposition to the measures before it. Whereas the previous measures contained one to

two measure phrases with arpeggiated motion that utilize chromatic approach tones, this section contains more linear stepwise motion with the only intervallic jumps larger than a third acting as sustained goal tones.

Example 3.18. “Got A Match? Figure 4” measures 122-129.




The second segment of “Got A Match? Figure 4,” measures 146-162, emphasizes its phrasing in a different style than that of the first section of the figure. Contrary to the previous section, the second section of the motifs contains additional rest space and smaller phrases as well. The emphasis of this section lies more with the anticipation of these phrases. Nearly every phrase of this section begins on an offbeat and concludes with a sustained note. As Weckl concludes his final solo repetition of the form, Corea then signals the return to the form’s main melodic content. This is achieved through descending harmonic motion to return to the root chord, D minor.

“Got A Match? Figure 5” notates the final performance of the form which also includes the repeats of the last four measures. Just as the arrangement of the beginning of the work, both Corea and Patitucci perform the first rendition of the form, followed by Patitucci converting to a walking bassline for the second time through the form. Patitucci’s walking pattern for this final section of the piece is nearly identical to the first figure. In contrast to the opening, the last eight measures are used as a turn. The turn progression is performed with E minor seven with a flat five to A seven, sharp five, sharp

nine, to D minor for two measures as a phrase that is repeated. This progression only repeats once before the final build up to the conclusion of the work: a sustained D minor seven chord, briefly emphasized by a C nine chord.

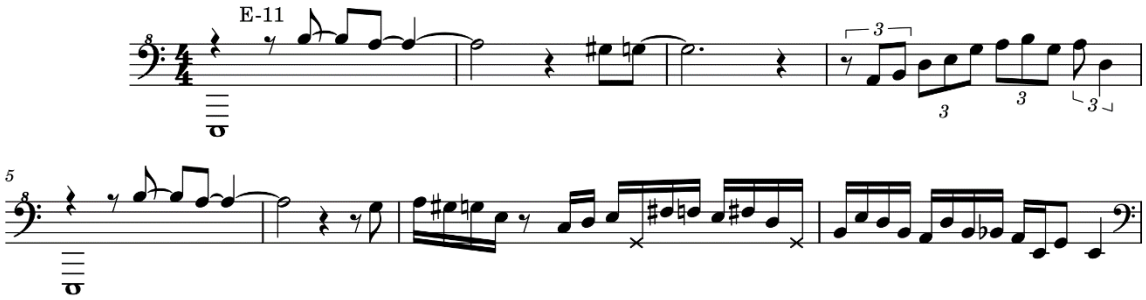
John Patitucci: Analysis of "Searching, Finding" by John Patitucci

"Searching, Finding" was released in 1987 on Patitucci's debut solo album, aptly titled *John Patitucci*. The work features Chick Corea on acoustic piano, Peter Erskine on drums, Michael Brecker on tenor saxophone, Dave Witham on synthesizers, and John Patitucci, playing his Smith/Jackson six-string bass guitar. This piece was chosen for this project to demonstrate Patitucci's compositional style and approach to performing original works with an ensemble. Contrary to "Got A Match?" this piece maintains a steady swing at 142 beats per minute in the key of E minor. Erskine provides a drum pick up on beat four to provide a quick entrance into the piece, which opens on an eight-measure vamped figure. This section is repeated, which provides both the bass guitar and the saxophone with the opportunity to offer soloistic motifs. During the first eight measure vamp, the bass guitar provides the first instance.

As seen in Example 3.19, Patitucci begins the vamped figure by striking the low E string and letting it sustain while also providing two notational hits on the offbeats of two and three. These notes—E as the root, B as the fifth, and A acting as the eleventh—make up the melodic content of this vamped section. The first solo concept within measure 4 begins on the eleventh and follows a G major pentatonic pattern beginning on the second scale degree. Within measures seven through eight, Patitucci is outlining the E minor eleven chord by emphasizing the eleventh and approaching the root by way of a chromatic descension to the third, G, and resolving on E. Patitucci then ascends to the

nineth, F-sharp, and uses more chromaticism to approach the root, followed by more E minor voicings and another set of chromaticism to the eleventh before resolving the phrase on a minor third between E, the root, and G, the third.

Example 3.19. “Searching, Finding” measures 1-8.

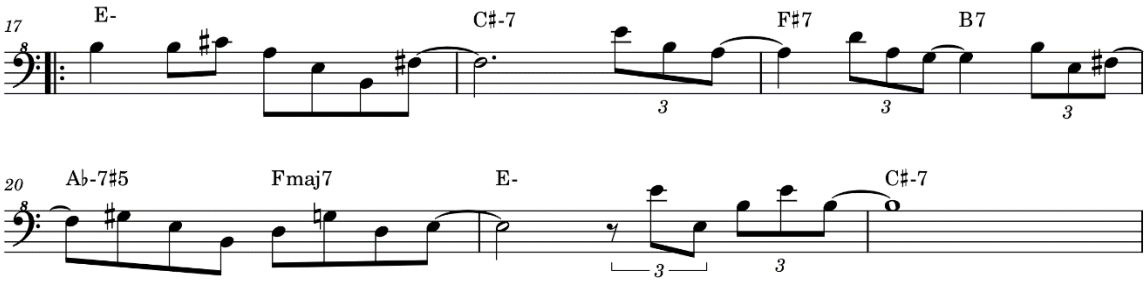



The sixteen measure A section of the work features both Patitucci and Brecker performing the melody. While the bass guitar performs the melody, this piece also contains a synth bass part provided by Witham which maintains the role of walking the bassline. This allows Patitucci to perform his instrument in a lead capacity for the duration of the piece. Excerpts of Witham’s walking basslines as well as Patitucci’s can be found in Figures 1-6 of “Searching, Finding” in Appendix N. This section begins by alternating between two measure sections of straight eighth-note phrases and triplet phrases. These phrases share a commonality wherein they each resolve on a tied note. The eighth-note phrases sustain on their goal tones longer than the triplet phrases. Tonally, the melody begins on the fifth of the chord and progresses in descending arpeggiated motion.

As seen in Example 3.20, the sustained notes each fall into the spectrum of E minor, the F-sharp in measure 18, the G and A in measure 19, and the return of F-sharp in measure 20 as well. Even the triplet arpeggiation found in measure 21 contains an E

minor shaping with a resolution on the fifth, or the minor seventh of the C-sharp minor seven chord.

Example 3.20. “Searching, Finding” measures 17-22.




The B section is comparable to the introduction in that it is an eight-measure vamp of E minor; however, in the context of the melody it is not repeated. Brecker performs a brief solo over this B section before heading back into the next A section. Corea’s underscoring for these sections contain percussive, rhythmic hits as well as additional phrasings and voicings to complement the melody and solo segments. Brecker then takes the first solo, performing over the A and B sections but with the voicings extended to provide a sense of growth within the comping parts. Prior to the bass guitar solo section, Witham can be heard providing a change in tonality by switching from the synth bass to a Wurlitzer electric piano tone.

The transcription for the “Searching, Finding” solo is located in Appendix M. Patitucci performs the second solo over the form by descending an E minor arpeggiation from the third, G, and resolving on the root. In this context, however, the E becomes the minor third of the C-sharp eleven chord. Much of measures 3-8 demonstrate Patitucci utilizing sixteenth note runs to provide linear motion of chord tones. Descending motion in fourths is briefly demonstrated in beats two and three of measure 4. Patitucci spans measures 9-12 incorporating triplet patterns while emphasizing key tonal centers such as

the F-sharp in beat four of measure 10, the eleventh of the C-sharp minor eleven, the G in beat two which is the nineth in the F major nine chord, and the B on the downbeat of measure 12 in relation to the A over B chord.

Measures 16-18 explore the upper register of both the instrument and the E minor scale. Patitucci encompasses the third of the E minor eleven chord through an assortment of chromatic passing tones as well as linear descension which leads into a triplet figure. During measures 20-24 of this triplet figure, Patitucci begins a widely-spanned arpeggiated descension which frequently spans as far as a tenth in intervallic distance from the top of the triplet pattern to the base. Closing out his solo, Patitucci resolves this triplet phrasing with a brief sustain on the eleventh of the E minor eleven chord, the A.

Corea takes the final solo for this piece before heading back into the main melodic content of the work. The piece concludes with an extended vamp on the eight-measure E minor figure until the fade out completes its decay. Corea continues to provide his improvisations throughout the remainder of the piece while Patitucci, Erskine, and Witham maintain the vamped E minor eleven groove established at the beginning of the piece. Brecker, however, does not apply any additional saxophone beyond the final rendition of the melody.

## Chapter Four: The Recording Methodology

Throughout the course of creating these recordings, navigating the challenges of the COVID-19 pandemic provided the greatest obstacle. The recordings for this project were done either as remotely as possible or by maintaining proper social distancing protocols as a precautionary measure. Each of the musicians on these recordings were provided a reference track and recorded their parts remotely alongside the reference track. The files featuring their recordings were then collected and layered together to form backing audio tracks which were then finalized with the electric bass guitar tracks. During the mixing process, due to the use of these reference tracks, all the instrumentation aligned with no editing or other major adjustments necessary.

The tracks were recorded into a Tascam 16x08 interface, which transferred a USB signal into a Dell Inspiron 5680 PC that was running the digital audio workstation Presonus Studio One version four. The Dell Inspiron operated Microsoft Windows 10, with an Intel Core i7-8700 CPU processor at 3.20GHz, with sixteen gigabytes of RAM. The Tascam 16x08, a USB interface with sixteen inputs and eight outputs, maintained a buffer size of 128 samples with a sample rate of 44.1kHz and was also set to bypass the internal mixer. Located on the master track for each of the mixes, the Presonus limiter was applied to prevent peaking in the mix and the final mixdowns. The input was set to 0.00dB, the ceiling was set to -1.00dB, the threshold was set to -1.00dB, and the release was set to 273.6 milliseconds.

The pieces selected for this project feature musicians native to the mid-Michigan area. Tyler Caryl, a graduate of Mott College in Flint, Michigan, provided the alto saxophone on “View From Seventh Heaven” and tenor saxophone on “Searching, Finding.” Robin Chan, a graduate of Central Michigan University in Mount Pleasant, Michigan, provided guitar on “Tropical Butterfly.” Jenn McMillan, a graduate of the University of Michigan-Flint in Flint, Michigan, provided vocals on “If It’s Magic.” Joe Neminski, a graduate of the University of Michigan-Flint in Flint, Michigan, provided drums and percussion on “Tropical Butterfly,” “View From Seventh Heaven,” “Thunder And Birdies,” “Got A Match?” and “Searching, Finding.” Desmond Sheppard, another graduate of the University of Michigan-Flint, provided the synth instrumentation for “Tropical Butterfly,” “View From Seventh Heaven,” “Thunder And Birdies,” “Got A Match?” and “Searching, Finding.”

## Drum Tracking

Tracking the drums was the first step in the process. The session took place between December 30 and December 31, 2020, at the drummer’s residence in Flint, Michigan. The session on December 30 involved the initial mic set up and featured three takes of “Tropical Butterfly,” three takes of “Searching, Finding,” and three takes of “Thunder And Birdies.” The session on December 31 involved three takes of “View From Seventh Heaven,” and two takes of “Got A Match?.”

The mic setup for the drums consisted of a seven-microphone mix using the Shure PGA Drum Kit into a Tascam US-16x08 interface. The microphones were attached to the interface through XLR microphone cables and the interface volumes were adjusted until each track received a signal just below peak volume. This occurred on the interface at a

quarter turn of the volume knobs. A Shure PGA52 cardioid dynamic kick drum microphone was placed inside the Pearl Masters MCX twenty-two-inch bass drum, using Evans EMAD bass drumheads, which sent the signal to channel one of the interface. The kick drum pedal used was a Pearl Demon Chain Drive Eliminator Double bass drum pedal. A Shure PGA57 cardioid dynamic microphone was placed on a microphone stand, four inches above the rim of the snare drum, a fourteen-inch Orange County snare drum, pointed toward the center of the Evans HD Genera Dry drumhead, and was applied to channel two of the interface. Three Shure PGA56 cardioid dynamic microphones were connected to the Peal Masters MCX ten-inch high tom, fourteen-inch low tom, and sixteen-inch floor tom, with Evans UV2 heads and sent signal to channels three, four, and five of the interface. Two Shure PA81s cardioid condenser microphones captured the overhead audio and sent the reciprocated signals to channels six and seven of the interface. The overhead microphones captured the Sabian Artisan fifteen inch hi hat, both the sixteen inch and eighteen-inch Sabian Artisan crash cymbals, the twenty-one-inch Sabian HHX Groove ride cymbal, the eighteen-inch Sabian HHX Ozone crash cymbal, the six-inch Sabian Paragon splash cymbal, and the twenty-inch Sabian Paragon China cymbal. Two cymbal stacks were also captured within the overhead microphone tracks. The first stack consisted of a fourteen-inch Sabian HHX legacy hi hat cymbal on the top and a sixteen-inch Wuhan China cymbal on the bottom. The second stack comprised of an eight-inch Paiste Signature splash cymbal on the top and a ten-inch Wuhan China cymbal on the bottom. A Latin Percussion LP ES-6 Cowbell was also included in this drum set build as well. The sticks used for this kit were the Vic Firth Peter Erskine signature sticks, as well as the Promark Todd Sucherman signature sticks.

Mixing the drums uniformly across each of the tracks provided the acoustic framework for the rest of the mix. By creating the drums in a sonic atmosphere which remains consistent across all five of the tracks they are on, they help provide that semblance of the recordings being done in the same session along with the other musicians. When mixing each track, a copy of the reference track was placed in track one, followed by the bass guitar recordings on track two. For “Tropical Butterfly,” the drum tracks are placed on tracks nine through fifteen, following the guitar tracks; “View From Seventh Heaven,” “Thunder And Birdies,” and “Got A Match?” have the drums on tracks three through nine; and “Searching, Finding” has the drums on tracks four through ten, following the additional fretless bass guitar track. The tracking order remains the same across all five tracks due to the order input into the interface. The order starts with the kick drum, then the snare drum, followed by the high, mid, and floor toms, overhead left, and overhead right.

Finalizing the mix of the drums reconstructs the sonic spacing and placement of each instrument as if the listener is sitting behind the drum set themselves. The kick drum is panned center at a mix volume of +0.2dB on the mixing console. The snare drum is panned left five degrees, or “L5,” and is lowered -0.2dB. The high tom is panned three degrees left, or “L3,” and is lowered -2.7dB. The mid tom is panned fifteen degrees right, or “R15,” and is raised +5.5dB. The floor tom is panned twenty-nine degrees to the right, or “R29,” and is raised +6.7dB. The left overhead microphone is panned thirty degrees to the left, or “R30,” and is raised +6.3dB. And the right overhead microphone is panned a mirroring thirty degrees to the left, or “L30,” and is also raised +6.3dB to match the right overhead levels.

All drum tracks include the Presonus Room Reverb preset “Bedroom” in their effect chains. This preset provides the track a mean room size of 2.75 meters, 1.33 meters wide, and 0.69 meters in height. The relative source-listener distance is set to 0.10, and the relative height acoustic plane is set to 0. This preset replicates a small room which is 3.77 meters wide, 2.83 meters deep, and 1.95 meters in height. The resulting tail-pre-delay is set to 0 milliseconds, the resulting tail-length is set to 498.6 milliseconds. The character options are set to a dampness, or humidity, of 0.20, a population, or bass/movement, of 0.55, and the reflexivity is set to 0.27. The early reflections/late reverb balance is set to 0.22, and the effect depth, or dry/wet mix is set to 20.0%.

The kick drum contains the Presonus insert “Fat Channel,” applied to the kick drum twice with two separate presets. This technique is approached to give the kick drum both more presence in the overall mix, as well as provide a stronger resonance to the drum’s sonic spectrum. The first Fat Channel preset in place on the bass drum track is the “Kick 1” preset with its High Pass Filter, Compressor, and Equalizer enabled. The high pass filter is set to “off,” its gate threshold is set to -29.32dB, its expander set to “auto,” its key filter set to 212.1Hz, its attack set to 0.46 milliseconds, and its release set to 373 milliseconds. The compressor threshold is set to -22.40dB, its ratio is set to 2.6:1, the key filter is set to “off,” its attack and release are both set to “auto,” and its gain is set to 5.60dB. The equalizer’s low frequency is set to register a frequency of 69.11Hz, the gain at 4.06dB, and its filter quality at 0.61. The low-mid frequency is set to register a frequency of 241.1Hz, the gain at -5.24dB, and its filter quality set to 4.00. The high-mid frequency is set to register a frequency of 1.37kHz, the gain at -0.06dB, and its filter quality set to 0.10. The high frequency is set to register a frequency of 3.06kHz, Gain

3.47dB, Filter Quality 0.30. The second Fat Channel preset in place on the bass drum track is the “Kick 2” preset. The only difference between these two presets being that “Kick 2” are the release of the High Pass Filter is set to 373 milliseconds, and the low-mid frequency’s gain is set at -3.24dB. With these presets layered, the result is a punchy kick drum which fits into the mix.

The snare drum contains the Presonus inserts ProEQ and Fat Channel. These presets provide the snare drum the sonic alterations necessary to allow the snare wires to be more present in the mix. ProEQ is set to its preset, “SD—Bright,” with the low frequency filter quality set to 1.24, the filter gain set to 0.96dB, the filter frequency set to 140Hz, and the filter type set to “peaking.” The mid frequency filter quality is set to 1.00, the filter gain is set to 0.00dB, and the filter frequency is set to 2.00kHz. The high frequency filter quality is set to 1.00, the filter gain is set to 4.55dB, the filter frequency is set to 5.51kHz, and the filter type is set to a 12dB shelf. The low-cut filter frequency is set to 75.0Hz, and the filter slope is set to a 12dB/Oct. The low mid frequency filter quality is set to 4.58, the filter gain is set to 1.44dB, and the filter frequency is set to 1.11kHz. The high mid frequency filter quality is set to 0.76, the filter gain is set to 3.60dB, and the filter frequency is set to 3.19kHz. The high cut filter frequency is set to 16.00kHz, and the filter slope is set to a 12dB/Oct. The automatic gain correction is set at 0.00dB.

Fat Channel is set to its “Snare Snappy” preset with its High Pass Filter, Compressor, Equalizer, and Limiter enabled. The high pass filter is set to 92Hz, its gate threshold is set to -36.56dB, its expander set to “auto,” its key filter set to 2.07Hz, its attack set to 0.50 milliseconds, and its release set to 506 milliseconds. The compressor

threshold is set to -21.96dB, its ratio is set to 2.9:1, the key filter is set to “off,” its attack and release are both set to “auto,” and its gain is set to 5.71dB. The equalizer’s low frequency is set to register a frequency of 108.50Hz, the gain at 1.35dB, and its filter quality at 0.58. The low-mid frequency is set to register a frequency of 238.6Hz, the gain at -0.76dB, and its filter quality set to 4.00. The high-mid frequency is set to register a frequency of 2.90kHz, the gain at 6.53dB, and its filter quality set to 4.00. The high frequency is set to register a frequency of 6.61kHz, the gain set to 5.00dB, and a filter quality of 0.63. The limiter is also set to -3.18dB.

The high rack tom contains the Presonus inserts ProEQ and Fat Channel. These presets help the high tom microphone to capture the hits on the instrument through a gate filter, as well as providing sonic enhancements. ProEQ is set to its preset, “Toms—Rack,” with the low frequency filter quality set to 1.60, the filter gain set to 6.42dB, the filter frequency set to 140Hz, and the filter type set to “peaking.” The mid frequency filter quality is set to 6.55, the filter gain is set to 0.00dB, and the filter frequency is set to 815.00Hz. The high frequency filter quality is set to 1.84, the filter gain is set to 4.08dB, the filter frequency is set to 5.91kHz, and the filter type is set to a 12dB shelf. The low-cut filter frequency is set to 50.0Hz, and the filter slope is set to a 36dB/Oct. The low mid frequency filter quality is set to 8.41, the filter gain is set to -24.00dB, and the filter frequency is set to 811Hz. The high mid frequency filter quality is set to 2.43, the filter gain is set to 0.00dB, and the filter frequency is set to 3.08kHz. The high cut filter frequency is set to 16.00kHz, and the filter slope is set to a 12dB/Oct. The automatic gain correction is set at “auto.”

Fat Channel is set to its “Toms High” preset with its High Pass Filter, Compressor, Equalizer, and Limiter enabled. The high pass filter is set to 88Hz, its gate threshold is set to -25.04dB, its expander set to “auto,” its key filter set to 1.02Hz, its attack set to 0.02 milliseconds, and its release set to 385 milliseconds. The compressor threshold is set to -14.05dB, its ratio is set to 2.0:1, the key filter is set to “off,” its attack and release are both set to “auto,” and its gain is set to 5.71dB. The equalizer’s low frequency is set to register a frequency of 124.9Hz, the gain at 2.65dB, and its filter quality at 0.58. The low-mid frequency is set to register a frequency of 457.2Hz, the gain at -4.18dB, and its filter quality set to 4.00. The high-mid frequency is set to register a frequency of 2.08kHz, the gain at 4.65dB, and its filter quality set to 4.00. The high frequency is set to register a frequency of 4.80kHz, the gain set to 1.94dB, and a filter quality of 0.63. The limiter is also set to -3.18dB.

The mid rack tom contains the Presonus inserts ProEQ and Fat Channel. Just as with the high tom inserts, these presets allow the mid tom microphone to capture the hits on the instrument through a gate filter as well as providing sonic enhancements. ProEQ is set to its preset, “Toms—Floor,” with the low frequency filter quality set to 1.60, the filter gain set to 8.64dB, the filter frequency set to 80.6Hz, and the filter type set to “peaking.” The mid frequency filter quality is set to 6.55, the filter gain is set to 0.00dB, and the filter frequency is set to 815.00Hz. The high frequency filter quality is set to 1.84, the filter gain is set to 4.08dB, the filter frequency is set to 5.91kHz, and the filter type is set to a 12dB shelf. The low-cut filter frequency is set to 50.0Hz, and the filter slope is set to a 36dB/Oct. The low mid frequency filter quality is set to 8.41, the filter gain is set to the range of -24.00dB, and the filter frequency is set to 811Hz. The high mid frequency

filter quality is set to 2.43, the filter gain is set to 0.00dB, and the filter frequency is set to 3.08kHz. The high cut filter frequency is set to 16.00kHz, and the filter slope is set to a 12dB/Oct. The automatic gain correction is set at “auto.”

Fat Channel is set to its “Toms Mid” preset with its High Pass Filter, Compressor, Equalizer, and Limiter enabled. The high pass filter is set to 74Hz, its gate threshold is set to -36.56dB, its expander set to “auto,” its key filter set to 1.68kHz, its attack set to 0.27 milliseconds, and its release set to 478 milliseconds. The compressor threshold is set to the range of -22.30dB, its ratio is set to 2.5:1, the key filter is set to “off,” its attack and release are both set to “auto,” and its gain is set to 5.71dB. The equalizer’s low frequency is set to register a frequency of 108.5Hz, the gain at 1.35dB, and its filter quality at 0.58. The low-mid frequency is set to register a frequency of 358.3Hz, the gain at -3.47dB, and its filter quality set to 4.00. The high-mid frequency is set to register a frequency of 1.65kHz, the gain at -2.18dB, and its filter quality set to 4.00. The high frequency is set to register a frequency of 5.58kHz, the gain set to 3.71dB, and a filter quality of 0.63. The limiter is also set to -3.18dB.

The floor tom contains the Presonus inserts ProEQ and Fat Channel. Just as with the high and mid tom inserts, these presets allow the mid tom microphone to capture the hits on the instrument through a gate filter, as well as providing sonic enhancements. ProEQ is set to its preset, “Toms—Low,” with the low frequency filter quality set to 1.00, the filter gain set to 0.00dB, the filter frequency set to 110Hz, and the filter type set to “peaking.” The mid frequency filter quality is set to 1.00, the filter gain is set to 0.00dB, and the filter frequency is set to 2.00kHz. The high frequency filter quality is set to 1.00, the filter gain is set to 0.00dB, the filter frequency is set to 11.00kHz, and the filter type is

set to a 6dB shelf. The low-cut filter frequency is set to 100.0Hz, and the filter slope is set to a 12dB/Oct. The low mid frequency filter quality is set to 1.00, the filter frequency is set to 350Hz, and the filter gain is set to -12.00dB. The high mid frequency filter quality is set to 1.00, the filter gain is set to 5.00dB, and the filter frequency is set to 5.00kHz. The high cut filter frequency is set to 16.00kHz, and the filter slope is set to a 12dB/Oct. The automatic gain correction is set at 0.00dB.

Fat Channel is set to its "Toms Low" preset with its High Pass Filter, Compressor, Equalizer, and Limiter enabled. The high pass filter is set to 55Hz, its gate threshold is set to -28.66dB, its expander set to "auto," its key filter set to 323.8Hz, its attack set to 0.02 milliseconds, and its release set to 358 milliseconds. The compressor threshold is set to read -14.05dB, its ratio is set to 2.0:1, the key filter is set to "off," its attack and release are both set to "auto," and its gain is set to 5.71dB. The equalizer's low frequency is set to register a frequency of 95.27Hz, the gain at 2.65dB, and its filter quality at 0.58. The low-mid frequency is set to register a frequency of 236.2Hz, the gain at -2.18dB, and its filter quality set to 4.00. The high-mid frequency is set to register a frequency of 1.43kHz, the gain at 2.41dB, and its filter quality set to 4.00. The high frequency is set to register a frequency of 4.30kHz, the gain at 3.71dB, and a filter quality of 0.63. The limiter is also set to -3.18dB.

The left and right overhead microphone tracks also contain the Presonus inserts ProEQ and Fat Channel. These presets allow the overhead microphones to capture the higher frequency hits of the cymbals by providing sonic enhancements to the tracks as well. ProEQ is set to its preset, "Overheads—Rock," with the low frequency filter quality set to 1.60, the filter gain set to 8.64dB, the filter frequency set to 100Hz, and the filter

type set to a 6dB shelf. The mid frequency filter quality is set to 6.55, the filter gain is set to 0.00dB, and the filter frequency is set to 815Hz. The high frequency filter quality is set to 1.84, the filter gain is set to 5.04dB, the filter frequency is set to 8.06kHz, and the filter type is set to a 12dB shelf. The low-cut filter frequency is set to 50.0Hz, and the filter slope is set to a 36dB/Oct. The low mid frequency filter quality is set to 8.41, the filter gain is set to 0.00dB, and the filter frequency is set to 811Hz. The high mid frequency filter quality is set to 2.43, the filter gain is set to 2.88dB, and the filter frequency is set to 2.51kHz. The high cut filter frequency is set to 16.00kHz, and the filter slope is set to a 12dB/Oct. The automatic gain correction is set at "auto."

Fat Channel is set to its "Overhead Rock" preset with its Compressor and Equalizer enabled. The compressor threshold is set to -23.06dB, its ratio is set to 2.2:1, the key filter is set to "off," its attack and release are both set to "auto," and its gain is set to 3.18dB. The equalizer's low frequency is set to register a frequency of 158.9Hz, the gain at -13.59dB, and its filter quality at 0.58. The low-mid frequency is set to register a frequency of 202.8Hz, the gain at -4.18dB, and its filter quality set to 4.00. The high-mid frequency is set to register a frequency of 2.08kHz, the gain at 4.65dB, and its filter quality set to 4.00. The high frequency is set to register a frequency of 4.09kHz, gain 6.29dB, and filter quality 0.63.

"Tropical Butterfly" also includes a conga part, performed on a LP Performer Series conga, in the mix which is performed throughout the piece on tracks sixteen and seventeen. To provide the instrument more clarity, it is double tracked in the mix. The first conga track is mixed +1.8dB and panned thirty degrees to the left, or "L30," and the second conga track is mixed +1.4dB and is also panned thirty degrees to the left. The first

conga track is the primary track which features the different inserts ProEQ, Fat Channel, and Mixtool. ProEQ is set to its preset, “a little clarity,” with the low frequency filter quality set to 1.00, the filter gain set to 0.00dB, the filter frequency set to 110Hz, and the filter type set to “peaking.” The mid frequency filter quality is set to 1.00, the filter gain is set to 5.04dB, and the filter frequency is set to 2.27kHz. The high frequency filter quality is set to 1.00, the filter gain is set to 0.00dB, the filter frequency is set to 11.00kHz, and the filter type is set to a 6.00dB shelf. The low-cut filter frequency is set to 75.0Hz, and the filter slope is set to a 12dB/Oct. The low mid frequency filter quality is set to 1.00, the filter gain is set to -2.88dB, and the filter frequency is set to 7.94kHz. The high cut filter frequency is set to 16.00kHz, and the filter slope is set to a 12dB/Oct. The automatic gain correction is set at 0.00dB.

Fat Channel is set to its “Congas” preset with its High Pass Filter, Compressor, and Equalizer enabled. The high pass filter is set to 116Hz, its gate threshold is set to -55.67dB, its expander set to “auto,” its key filter set to 3.73Hz, its attack set to 0.11 milliseconds, and its release set to 207 milliseconds. The compressor threshold is set to -9.66dB, its ratio is set to 2.1:1, the key filter is set to “off,” its attack and release are both set to “auto,” and its gain is set to 2.96dB. The equalizer’s low frequency is set to register a frequency of 82.79Hz, the gain at -3.35dB, and its filter quality at 0.20. The low-mid frequency is set to register a frequency of 714.8Hz, the gain at 2.65dB, and its filter quality set to 4.00. The high-mid frequency is set to register a frequency of 1.60kHz, the gain at 2.76dB, and its filter quality set to 4.00. The high frequency is set to register a frequency of 2.22kHz, the gain at 3.35dB, and a filter quality of 0.18. Mixtool is also set to its default setting, with the gain adjusted to 3.84dB.

Conversely, the secondary conga track provides additional sonic support and features only a reverb effect. Here, the Presonus Room Reverb preset “Large Club” is used. This preset provides the track a mean room size of 20.00 meters, 1.65 meters wide, and 0.65 meters in height. The relative source-listener distance is set to 0.85, and the relative height acoustic plane is set to 0.56. This preset replicates a large room which is 32.36 meters wide, 19.52 meters deep, and 12.67 meters in height. The resulting tail-pre-delay is set to 37.5 milliseconds, the resulting tail-length is set to 2.41 seconds. The character options are set to a dampness, or humidity, of 0.57, a population, or bass/movement, of 1.00, and the reflexivity is set to 0.67. The early reflections/late reverb balance is set to 0.47, and the effect depth, or dry/wet mix is set to 20.0%.

## MIDI Tracking

The second step in the process was to track all the Musical Instrument Digital Interface (MIDI) data into Presonus over the drum tracks. The MIDI data capturing was performed on an Akai MPK249 MIDI keyboard controller, connected to an M-Gear sustain pedal, running a USB signal into the Dell Inspiron 5680 PC, into Presonus Studio One. The MIDI instrumentation session took place on January 3, 2021, in Davison, Michigan. Due to the nature of MIDI recording, the tracks were all completed during that session through performing each of the songs in sections and layering each of the additional instrumentations. This session involved the recording of MIDI tracks for “Tropical Butterfly,” “Thunder And Birdies,” “View From Seventh Heaven,” “Searching, Finding,” and “Got A Match?.”

The MIDI instrumentation for “Tropical Butterfly” features a Rhodes-toned MIDI instrument, as well as MIDI string orchestra backing tones. Featured on track eighteen of

the mix is the Presonus MIDI preset “EP Rhodes clean.” This track was panned thirty degrees, or “R30,” to the right in the mix and is mixed at a volume of -4.3dB. Track nineteen contains the solo section on the Rhodes. Unlike the Rhodes on track eighteen, this track is centered in the mix and is mixed at a slightly lower volume of -9.2dB to compensate for the attack volume since it is a solo feature. Track twenty is comprised of the Presonus MIDI preset “Legato Hall Strings” and is panned center at a mix volume of -3.1dB. All three of these MIDI presets feature the Room Reverb preset “Bedroom” to match the other instrumentation of the piece. This preset provides the track a mean room size of 2.75 meters, 1.33 meters wide, and 0.69 meters in height. The relative source-listener distance is set to 0.10, and the relative height acoustic plane is set to 0.00. This preset replicates a small room which is 3.77 meters wide, 2.83 meters deep, and 1.95 meters in height. The resulting tail-pre-delay is set to 0 milliseconds, the resulting tail-length is set to 498.6 milliseconds. The character options are set to a dampness, or humidity, of 0.20, a population, or bass/movement, of 0.55, and the reflexivity is set to 0.27. The early reflections/late reverb balance is set to 0.22, and the effect depth, or dry/wet mix is set to 20.0%.

“View From Seventh Heaven” contains a MIDI piano throughout the piece and a bright string pad providing harmonic support to the bass guitar solo section. The MIDI piano used is the Presonus insert “Presence Studio Grand,” panned fifteen degrees left, or “L15,” and mixed right at the 0.00dB mark on the mixing console. This MIDI piano track makes use of track ten of the mix. The plugin features two inserts to help shape the instrument sonically, as well as provide space, ProEQ and Room Reverb. ProEQ is set to its preset, “Piano Player,” with the low frequency filter quality set to 1.00, the filter gain

set to 2.88dB, the filter frequency set to 155Hz, and the filter type set to peaking. The mid frequency filter quality is set to 2.91, the filter gain is set to -1.20dB, and the filter frequency is set to 1.04kHz. The high frequency filter quality is set to 1.00, the filter gain is set to 4.32dB, the filter frequency is set to 6.78kHz, and the filter type is set to peaking. The low-cut filter frequency is set to 75.0Hz, and the filter slope is set to a 36dB/Oct. The low mid frequency filter quality is set to 1.48, the filter gain is set to 1.00dB, and the filter frequency is set to 379Hz. The high mid frequency filter quality is set to 1.00, the filter gain is set to 2.54dB, and the filter frequency is set to 5.00kHz. The high cut filter frequency is set to 16.00kHz, and the filter slope is set to a 12dB/Oct. The automatic gain correction is set to 0.00dB. Room Reverb is set to its "Large Club" preset. This preset provides the track a mean room size of 20.00 meters, 1.65 meters wide, and 0.65 meters in height. The relative source-listener distance is set to 0.85, and the relative height acoustic plane is set to 0.56. This preset replicates a large room which is 32.36 meters wide, 19.52 meters deep, and 12.67 meters in height. The resulting tail-pre-delay is set to 37.5 milliseconds, the resulting tail-length is set to 2.41 seconds. The character options are set to a dampness, or humidity, of 0.57, a population, or bass/movement, of 1.00, and the reflexivity is set to 0.67. The early reflections/late reverb balance is set to 0.47, and the effect depth, or dry/wet mix is set to 20.0%.

Track eleven, however, contains the string synth heard alongside the bass guitar solo. This track is panned center at a mix volume of -21.5dB to push it into the background. This track makes use of the Presonus MIDI instrument "Violin Full" along with three inserts: OpenAir, ProEQ, and Fat Channel. OpenAir uses the preset "Alive Chamber" and provides a pre-delay offset of 0 milliseconds, a length offset of 2.90

seconds, an early reflections/late reverb balance of 0.57, the gain set to 0.00dB, with a mix of 28.5%. The envelope is set to fade-in for 0 milliseconds, contain an early reflections/late reverb-crossover of 14 milliseconds, and a fade-out of 100 milliseconds. The processing cross-feed is set to 30%, the cross-delay at 10.0 milliseconds, and the asymmetry is centered. Low shelf frequency is set to 120Hz, the low-mid frequency is set to 412Hz, the mid-high frequency is set to 1.27kHz, and the high shelf frequency is set to 6.80kHz.

ProEQ is set to its preset, “Strings,” with the low frequency filter quality set to 1.00, the filter gain set to 2.64dB, the filter frequency set to 110Hz, and the filter type set to peaking. The mid frequency filter quality is set to 1.00, the filter gain is set to 7.44dB, and the filter frequency is set to 2.45kHz. The high frequency filter quality is set to 1.00, the filter gain is set to 3.36dB, the filter frequency is set to 12.19kHz, and the filter type is set to a 6dB shelf. The low-cut filter frequency is set to 75.0Hz, and the filter slope is set to a 12dB/Oct. The low mid frequency filter quality is set to 0.40, the filter gain is set to 3.36dB, and the filter frequency is set to 265Hz. The high mid frequency filter quality is set to 1.00, the filter gain is set to 5.52dB, and the filter frequency is set to 6.73kHz. The high cut filter frequency is set to 16.00kHz, and the filter slope is set to a 12dB/Oct. The automatic gain correction is set to 0.00dB.

Fat Channel is set to its “Synthesizer” preset with its Equalizer enabled. The equalizer’s low frequency is set to register a frequency of 130.0Hz, the gain at 0.00dB, and its filter quality at 0.60. The low-mid frequency is set to register a frequency of 320.0Hz, the gain at 0.00dB, and its filter quality set to 0.60. The high-mid frequency is set to register a frequency of 1.40kHz, the gain at 0.00dB, and its filter quality set to 0.60.

The high frequency is set to register a frequency of 5.00kHz, gain 0.00dB, and filter quality 0.60.

"Thunder And Birdies" also contains a MIDI piano throughout the piece, a Rhodes-tone track, and another string pad which sustains a single note over repeats of the chorus of the piece. The MIDI Piano used is also the Presonus plugin "Presence Studio Grand," panned fifteen degrees left, or "L15," and mixed right at the 0.00dB mark on the mixing console. This MIDI piano track makes use of track ten of the mix. The plugin features the Presonus insert "Room Reverb," with the "Large Club" preset, to place the instrument in a similar sonic space as the rest of the mix. This preset provides the track a mean room size of 20.00 meters, 1.65 meters wide, and 0.65 meters in height. The relative source-listener distance is set to 0.85, and the relative height acoustic plane is set to 0.56. This preset replicates a large room which is 32.36 meters wide, 19.52 meters deep, and 12.67 meters in height. The resulting tail-pre-delay is set to 37.5 milliseconds, the resulting tail-length is set to 2.41 seconds. The character options are set to a dampness, or humidity, of 0.57, a population, or bass/movement, of 1.00, and the reflexivity is set to 0.67. The early reflections/late reverb balance is set to 0.47, and the effect depth, or dry/wet mix is set to 20.0%. Track eleven contains the Rhodes-toned MIDI, the Presonus plugin "Rhodes—Hard," that can be heard in the chorus sections of this piece. The track is panned center at a mix volume of -4.5dB. The "Room Reverb" preset "Large Club" is applied to this track as well. Track twelve contains the MIDI "Violin Full" which sustains over the chorus at an overall mix volume of -14.1dB and is panned center. Due to the low volume in the mix, this track did not require any additional plugins or inserts.

"Searching, Finding" also contains a MIDI piano throughout the piece. In this instance, however, the Presonus "Presence Studio Grand" remains the sole use of MIDI in this track. Within this mix, the piano track occurs in track eleven, panned left fifteen degrees, or "L15," and is also mixed right at the 0.00dB mark on the mixing console. This track contains two inserts, "Channel Strip" and "Room Reverb." Channel strip is set to its "default" preset, which offers a sonic enhancement with the channel frequency set to 75.0Hz, the low frequency set to 80.0Hz, the mid frequency set to 2.50kHz, and the high frequency set to 12kHz. Room Reverb is also set to its "default" preset which provides a mean room size of 8.50 meters, 0.80 meters wide, and 0.40 meters in height. The relative source-listener distance is set to 0.89, and the relative height acoustic plane is set to 0.59. This preset replicates a medium room which is 9.94 meters wide, 12.43 meters deep, and 4.97 meters in height. The resulting tail-pre-delay is set to 27.5 milliseconds, the resulting tail-length is set to 3.18 seconds. The character options are set to a dampness, or humidity, of 0.50, a population, or bass/movement, of 0.50, and the reflexivity is set to 0. The early reflections/late reverb balance is set to 0.50, and the effect depth, or dry/wet mix is set to 20.0%.

"Got A Match?" contains a MIDI clavinet throughout the piece. The Presonus "Clavinet 3" remains the sole use of MIDI in this track. Within this mix, the clavinet track occurs in track ten, panned center, and is mixed at -3.9dB on the mixing console. This track contains three inserts, ProEQ, Room Reverb, and Fat Channel. ProEQ is set to its preset, "Keys—3B Organ," with the low frequency filter quality set to 1.00, the filter gain set to 0.00dB, the filter frequency set to 110Hz, and the filter type set to "peaking." The mid frequency filter quality is set to 2.31, the filter gain is set to 4.08dB, and the

filter frequency is set to 1.32kHz. The high frequency filter quality is set to 1.00, the filter gain is set to 0.00dB, the filter frequency is set to 11.00kHz, and the filter type is set to a 6dB shelf. The low-cut filter frequency is set to 75.0Hz, and the filter slope is set to a 12dB/Oct. The low mid frequency filter quality is set to 0.54, the filter gain is set to 5.28dB, and the filter frequency is set to 448Hz. The high mid frequency filter quality is set to 1.00, the filter gain is set to 1.44dB, and the filter frequency is set to 5.00kHz. The high cut filter frequency is set to 16.00kHz, and the filter slope is set to a 12dB/Oct. The automatic gain correction is set at 0.00dB.

Fat Channel is set to its "Piano Electric 2" preset with its High Pass Filter, Compressor and Equalizer enabled. The compressor threshold is set to -20.72dB, its ratio is set to 1.6:1, the key filter is set to "off," its attack and release are both set to "auto," and its gain is set to 3.29dB. The equalizer's low frequency is set to register a frequency of 132.3Hz, the gain at 2.04dB, and its filter quality at 0.22. The low-mid frequency is set to register a frequency of 112.5Hz, the gain at 0.76dB, and its filter quality set to 4.00. The high-mid frequency is set to register a frequency of 1.19kHz, the gain at -2.46dB, and its filter quality set to 4.00. The high frequency is set to register a frequency of 9.62kHz, the gain set to -3.16dB, and a filter quality of 0.21. Room Reverb is set to its "Small Studio" preset. This preset provides the track a mean room size of 2.75 meters, 0.80 meters wide, and 0.81 meters in height. The relative source-listener distance is set to 0.17, and the relative height acoustic plane is set to 0. This preset replicates a small room which is 2.55 meters wide, 3.19 meters deep, and 2.57 meters in height. The resulting tail-pre-delay is set to 0 milliseconds, the resulting tail-length is set to 612 milliseconds. The character options are set to a dampness, or humidity, of 0, a population, or

bass/movement, of 0.46, and the reflexivity is set to 0.50. The early reflections/late reverb balance is set to 0.29, and the effect depth, or dry/wet mix is set to 20.0%.

## Saxophone and Vocal Tracking

The third step of the process was tracking the saxophone parts for "View From Seventh Heaven" and "Searching, Finding," as well as receiving and mixing the vocal track for "If It's Magic." The saxophone recording session took place on January 9, 2021, in Burton, Michigan. Recording the saxophone parts, a Tascam TM-280 condenser microphone was attached to a microphone stand, which ran into a Tascam 16x08 interface into a Dell Inspiron 5680 PC running the digital audio workstation Presonus. The microphone's focal point was pointed towards the bell of the horn, while being placed twelve to sixteen inches from the instrument. The four-inch variance is dependent upon the motion of the musician while recording. "View From Seventh Heaven" was recorded on a P. Mauriat alto saxophone and "Searching, Finding" was recorded on a P. Mauriat tenor saxophone. Three takes of both tracks, "View From Seventh Heaven," and "Searching, Finding" were captured to have a variety of solo takes to choose from for both pieces.

The alto saxophone part for "View From Seventh Heaven" was placed on track twelve of the mix. Track twelve was panned fifteen degrees to the right, or "R15," and was mixed at +1.0dB on the mixing console. The track contains the inserts ProEQ, Fat Channel, and OpenAIR. ProEQ is set to its preset, "Male RNB," with the low frequency filter quality set to 1.00, the filter gain set to 0.00dB, the filter frequency set to 110Hz, and the filter type set to "peaking." The mid frequency filter quality is set to 1.00, the filter gain is set to 0.00dB, and the filter frequency is set to 2.00kHz. The high frequency

filter quality is set to 1.00, the filter gain is set to 0.00dB, the filter frequency is set to 11.00kHz, and the filter type is set to a 6dB shelf. The low-cut filter frequency is set to 197Hz, and the filter slope is set to a 12dB/Oct. The low mid frequency filter quality is set to 1.00, the filter gain is set to 0.00dB, and the filter frequency is set to 500Hz. The high mid frequency filter quality is set to 1.00, the filter gain is set to 2.88dB, and the filter frequency is set to 6.81kHz. The high cut filter frequency is set to 16.00kHz, and the filter slope is set to a 12dB/Oct. The automatic gain correction is set at 0.00dB.

Fat Channel is set to its "Sax" preset with its High Pass Filter, Compressor, Equalizer, and Limiter enabled. The high pass filter is set to 75Hz, its gate threshold is set to -54.02dB, its expander set to "auto," its key filter set to 1.05Hz, its attack set to 0.31 milliseconds, and its release set to 342 milliseconds. The compressor threshold is set to -15.15dB, its ratio is set to 1.9:1, the key filter is set to "off," its attack and release are both set to "auto," and its gain is set to 3.07dB. The equalizer's low frequency is set to register a frequency of 92.45Hz, the gain at -3.94dB, and its filter quality at 0.23. The low-mid frequency is set to register a frequency of 313.9Hz, the gain at -0.41dB, and its filter quality set to 4.00. The high-mid frequency is set to register a frequency of 1.40kHz, the gain at -0.18dB, and its filter quality set to 4.00. The high frequency is set to register a frequency of 2.79kHz, the gain at 2.53dB, and a filter quality of 0.14. The limiter is set to -3.84dB.

OpenAir uses the preset "Toght Space" and provides a pre-delay offset of 0 milliseconds, a length offset of 2.97 seconds, an early reflections/late reverb balance of 0.50, the gain set to 0.00dB, with a mix of 17.5%. The envelope is set to fade-in for 0 milliseconds, contain an early reflections/late reverb-crossover of 15.9 milliseconds, and

a fade-out of 100 milliseconds. The processing cross-feed is set to 30%, the cross-delay at 10.0 milliseconds, and the asymmetry is centered. Low shelf frequency is set to 120Hz, the low-mid frequency is set to 400Hz, the mid-high frequency is set to 1.20kHz, and the high shelf frequency is set to 6.80kHz. The tenor saxophone part for "Searching, Finding" also contained the inserts, ProEQ, Fat Channel, and OpenAIR set to the same levels as they were on "View From Seventh Heaven." Similarly, the saxophone was on track twelve for this piece as well. Conversely, "Searching, Finding" had an overall mix volume of +5.5dB on the mix console, and was paned ten degrees to the right, or "R10."

The vocal recording session for "If It's Magic" took place on January 13, 2021, in Phoenix, Arizona. Recording the vocals was done through an Audio-Technica AT2020 large diaphragm condenser microphone into a Focusrite Scarlett 2i2 interface through the digital audio workstation GarageBand. The vocal track was performed in one take. The vocal track for "If It's Magic" was placed on track three of the mix, panned thirty degrees to the right, or "R30," to create a stereo space wherein the bass guitar is thirty degrees left, as if sharing a stage with the vocals. The mix volume was left at 0.00dB on the mix console since the volume of the vocal track sufficed. Track three contains the inserts ProEQ, Fat Channel, and Room Reverb. ProEQ is set to its preset, "a little clarity," with the low frequency filter quality set to 1.00, the filter gain set to 0.00dB, the filter frequency set to 110Hz, and the filter type set to "peaking." The mid frequency filter quality is set to 1.00, the filter gain is set to 5.04dB, and the filter frequency is set to 2.27kHz. The high frequency filter quality is set to 1.00, the filter gain is set to 0.00dB, the filter frequency is set to 11.00kHz, and the filter type is set to a 6dB shelf. The low-cut filter frequency is set to 75.0Hz, and the filter slope is set to a 12dB/Oct. The low mid

frequency filter quality is set to 1.00, the filter gain is set to -2.88dB, and the filter frequency is set to 7.94kHz. The high cut filter frequency is set to 16.00kHz, and the filter slope is set to a 12dB/Oct. The automatic gain correction is set at 0.00dB.

Fat Channel is set to its "Female 3" preset with its High Pass Filter, Compressor, Equalizer, and Limiter enabled. The high pass filter is set to 192Hz, its gate threshold is set to -54.35dB, its expander set to "auto," its key filter set to 3.24Hz, its attack set to 0.17 milliseconds, and its release set to 354 milliseconds. The compressor threshold is set to -13.40dB, its ratio is set to 4.1:1, the key filter is set to "off," its attack and release are both set to "auto," and its gain is set to 3.18dB. The equalizer's low frequency is set to register a frequency of 134.00Hz, the gain at 0.53dB, and its filter quality at 0.62. The low-mid frequency is set to register a frequency of 241.1Hz, the gain at -2.29dB, and its filter quality set to 4.00. The high-mid frequency is set to register a frequency of 2.21kHz, the gain at 2.06dB, and its filter quality set to 4.00. The high frequency is set to register a frequency of 8.00kHz, the gain at 2.06dB, and a filter quality of 0.13. The limiter is set to -3.07dB.

The Presonus reverb plugin Room Reverb is on this track as well with the "Large Club" preset applied. This preset provides the track a mean room size of 20.00 meters, 1.65 meters wide, and 0.65 meters in height. The relative source-listener distance is set to 0.85, and the relative height acoustic plane is set to 0.56. This preset replicates a large room which is 32.36 meters wide, 19.52 meters deep, and 12.67 meters in height. The resulting tail-pre-delay is set to 37.5 milliseconds, the resulting tail-length is set to 2.41 seconds. The character options are set to a dampness, or humidity, of 0.57, a population,

or bass/movement, of 1.00, and the reflexivity is set to 0.67. The early reflections/late reverb balance is set to 0.47, and the effect depth, or dry/wet mix is set to 20.0%.

## Electric and Acoustic Guitar Tracking

The fourth step in the process was to place the guitar tracks into the mix of "Tropical Butterfly." The guitar tracking sessions took place remotely throughout January, in Flint, Michigan, and were submitted for mixing on February 2, 2021. The electric guitar parts were performed on a seven-string Music Man JPX, and the acoustic guitar parts were recorded on a Taylor 214ce. Each track was recorded into an AXE FX II XL, which then ran into a Universal Audio Apollo QUAD which then transferred the signal into Pro Tools 12 running on an Apple iMac. All but one of the tracks were run directly into the Pro Tools mix without plugins. The guitar solo track was the only track which included the Universal Audio plugin "Marshal Plexi Superlead 1959." This piece is the only piece in the project containing guitar.

Mixing the tracks in Presonus, multiple layering of electric guitar, as well as acoustic guitar tracks in "Tropical Butterfly" are placed on tracks four through eight. Each track contains the Ampire, ProEQ, Fat Channel, and Room Reverb inserts. The Room Reverb preset "Bedroom" and the ProEQ preset "Guitar—Full Electric Lead" are used for each of the tracks, however the presets for Ampire and Fat Channel differ slightly from track to track. Room Reverb's "Bedroom" preset provides the track a mean room size of 2.75 meters, 1.33 meters wide, and 0.69 meters in height. The relative source-listener distance is set to 0.10, and the relative height acoustic plane is set to 0. This preset replicates a small room which is 3.77 meters wide, 2.83 meters deep, and 1.95 meters in height. The resulting tail-pre-delay is set to 0 milliseconds, the resulting tail-

length is set to 498.6 milliseconds. The character options are set to a dampness, or humidity, of 0.20, a population, or bass/movement, of 0.55, and the reflexivity is set to 0.27. The early reflections/late reverb balance is set to 0.22, and the effect depth, or dry/wet mix is set to 20.0%.

ProEQ's "Guitar—Full Electric Lead" preset has the low frequency filter quality set to 0.71, the filter gain set to 2.16dB, the filter frequency set to 106Hz, and the filter type set to a 12dB shelf. The mid frequency filter quality is set to 0.71, the filter gain is set to 3.12dB, and the filter frequency is set to 3.72kHz. The high frequency filter quality is set to 0.71, the filter gain is set to 0.00dB, the filter frequency is set to 11.00kHz, and the filter type is set to a 12dB shelf. The low-cut filter frequency is set to 75.0Hz, and the filter slope is set to a 12dB/Oct. The low mid frequency filter quality is set to 0.71, the filter gain is set to 5.28dB, and the filter frequency is set to 525Hz. The high mid frequency filter quality is set to 0.71, the filter gain is set to 0.00dB, and the filter frequency is set to 5.00kHz. The high cut filter frequency is set to 15.70kHz, and the filter slope is set to a 12dB/Oct. The automatic gain correction is set at 1.26dB.

Track four contains the acoustic guitar playing the lead lines, panned left fifteen degrees, or "L15," and mixed at -8.8dB on the mixing console. This track contains two inserts, Ampire's "Clean Solo" amplification preset and Fat Channel's "Acoustic" preset. Ampire's "Clean Solo" preset contains amplifier simulation from their "Vintage American" amplifier head through a 2x12, a speaker cabinet with two twelve-inch speakers. The signal is sent through the amp head "A" with the drive set to 5.13, the bass to 3.2, the mid to 6.3, the treble to 6.3, the presence to 6.3, and the gain to 5.02. The input and output gain knobs are both set to 0.00dB. Fat Channel is set to its "Acoustic" preset

with its High Pass Filter, Compressor, Equalizer, and Limiter enabled. The high pass filter is set to 59Hz, its gate threshold is set to -84.00dB, its range set to 0.00dB, its key filter set to “off,” its attack set to 0.02 milliseconds, and its release set to 50 milliseconds. The compressor threshold is set to -13.62dB, its ratio is set to 1.5:1, the key filter is set to “off,” its attack and release are both set to “auto,” and its gain is set to 2.75dB. The equalizer’s low frequency is set to register a frequency of 36.0Hz, the gain at -0.18dB, and its filter quality at 0.54. The low-mid frequency is set to register a frequency of 229.1Hz, the gain at -1.35dB, and its filter quality set to 4.00. The high-mid frequency is set to register a frequency of 3.05kHz, the gain at 2.29dB, and its filter quality set to 4.00. The high frequency is set to register a frequency of 2.91kHz, the gain set to 3.12dB, and a filter quality of 0.20. The limiter is also set to 0.00dB.

Tracks six and seven contain the left and right rhythm tracks played on the electric guitar, panned sixteen degrees left and right, or “L16” and “R16” respectively, and are both mixed at -10.8dB on the mixing console. These tracks also both have the Ampire preset “Clean,” and the Fat Channel preset “Jazz” applied on them. Ampire’s “Clean” preset contains amplifier simulation from their “Clean British” amplifier head through a 1x12, a single twelve-inch speaker, British cabinet. The signal is sent through the amp head “A” with the drive set to 6.93, the bass to 5.1, the mid to 5.7, the treble to 5.5, the presence to 6.2, and the gain to 9.18. The input and output gain knobs are both set to 0.00dB. Fat Channel is set to its “Jazz” preset with its Compressor and Limiter enabled. The compressor threshold is set to -13.62dB, its ratio is set to 1.9:1, the key filter is set to “off,” its attack and release are both set to “auto,” and its gain is set to 5.82dB. The limiter is set to -3.95dB.

Tracks five and eight are comprised of the electric guitar tracks. Track five includes the electric guitar part which doubles the acoustic guitar lead lines in track four of the mix. Track eight contains the electric guitar's solo section. Track five is panned right fifteen degrees, or "R15," and mixed at -10.8dB on the mixing console. Track eight is panned center with a mix volume of -2.7dB on the mixing console. Both tracks contain presets from Ampire and Fat Channel as well. Ampire's "Nice Price" preset contains amplifier simulation from their "Clean British" amplifier head through a 2x12, a speaker cabinet with two twelve-inch speakers, American speaker cabinet. The signal is sent through the amp head "A" with the drive set to 9.30, the bass to 4.8, the mid to 3.8, the treble to 5.9, the presence to 4.3, and the gain to 8.63. The input gain is set to 0.0dB and the output gain is set to 4.50dB. This preset also includes two pedal simulators as well: a modulation pedal and an equalizer pedal. The sets the 100Hz levels to 0, the 200Hz levels to -1.36, the 400Hz levels to -3.01, the 800Hz levels to -2.81, the 1k6 levels to -1.75, the 3k2 levels to 0, and the 6k4 levels to 0. The modulation pedal has its chorus delay set to 6.43, its speed set to 0.53, its width set to 52.5%, and its depth set to 100%. Just as with tracks six and seven, Fat Channel is set to its "Jazz" preset on this track as well.

## Bass Guitar Tracking

The fifth and final step in the process was to record and mix the bass guitar tracks into the mixes without the need of a reference track. Finishing the project by recording the bass guitar alongside the recordings of the other players helped to provide a soundscape to the recordings which replicated that of an in-person session. The bass guitar tracking sessions took place throughout the month of February, in Nashville, Tennessee. The bass guitar parts for "Tropical Butterfly," "If It's Magic," "View From

Seventh Heaven," "Thunder And Birdies," "Got A Match?" and "Searching, Finding" were performed and recorded on a six-string Ibanez BTB846. The fretless bass guitar on "Searching, Finding" was performed and recorded on a Player Series Fender Jazz Bass. Each track was recorded into a Tascam 16x08 interface, which then transferred the signal into Presonus Studio One, version four, running on a Dell Inspiron 5680 PC.

The bass guitar tracks for "Tropical Butterfly" occur on tracks two and three. Track three contains the bass guitar solo section and track two comprises of the lead and backing basslines. Track two mixes the bass guitar at center of the mix and provides a mix level of +8.0 dB to bring the instrument to the forefront of the piece. Track three contains the same features both on the mixing console and regarding the effects added as well. Both Ampire and Presonus's compressor are utilized on this piece. Ampire's "Clean" preset on this track is adjusted for a bass guitar cabinet simulation. The adjustments use an amplifier simulation from their "Clean British" amplifier head through a 2x10, a speaker cabinet with two ten-inch speakers, bass cabinet. The signal is sent through the amp head "B" with the drive set to 6.55, the bass to 5.1, the mid to 5.7, the treble to 5.5, the presence to 6.2, and the gain to 9.24. The input and output gain knobs are both set to 0.00dB. The Presonus Compressor is applied to this track using the "Bass—Guitar" preset. This preset sets the reduction ratio to 9.9:1, the minimum level threshold adjusted to -18.00dB, the soft knee distance to 2.99dB, the makeup gain to 5.00dB, the mix level to 100%, the attack detection speed to 117 milliseconds, and the release detection speed to 339.9 milliseconds.

"If It's Magic" contains an additional effect which swells the volume and is used during certain portions of the piece to add to the instrumentation. These volume swells

create a temporary reduction in volume of -10.1dB for a duration of 5 milliseconds. These quick adjustments in volume are placed at the front of each note as to not capture the attack of the string pluck. The bass guitar itself was mixed at a volume of +8.7dB and panned thirty degrees left, or "L30," to mirror the sonic placement of the vocal melody. This track also contains inserts from Ampire, ProEQ, and Room Reverb. Just as with "Tropical Butterfly," the Ampire preset used was the "Clean" preset but adjusted for a bass guitar amplifier simulation. Just as with the vocal track, the bass guitar track has the Room Reverb preset "Large Club" applied. This preset provides the track a mean room size of 20.00 meters, 1.65 meters wide, and 0.65 meters in height. The relative source-listener distance is set to 0.85, and the relative height acoustic plane is set to 0.56. This preset replicates a large room which is 32.36 meters wide, 19.52 meters deep, and 12.67 meters in height. The resulting tail-pre-delay is set to 37.5 milliseconds, the resulting tail-length is set to 2.41 seconds. The character options are set to a dampness, or humidity, of 0.57, a population, or bass/movement, of 1.00, and the reflexivity is set to 0.67. The early reflections/late reverb balance is set to 0.47, and the effect depth, or dry/wet mix is set to 20.0%. ProEQ is set to its preset, "Bass—Guitar," with the low frequency filter quality set to 1.00, the filter gain set to 0.00dB, the filter frequency set to 110Hz, and the filter type set to a 12dB shelf. The mid frequency filter quality is set to 1.50, the filter gain is set to 12.00dB, and the filter frequency is set to 1.00kHz. The high frequency filter quality is set to 1.00, the filter gain is set to 0.00dB, the filter frequency is set to 11.00kHz, and the filter type is set to a 12dB shelf. The low-cut filter frequency is set to 20.0Hz, and the filter slope is set to a 48dB/Oct. The low mid frequency filter quality is set to 0.64, the filter gain is set to 5.00dB, and the filter frequency is set to 300Hz. The

high mid frequency filter quality is set to 1.00, the filter gain is set to 10.80dB, and the filter frequency is set to 5.00kHz. The high cut filter frequency is set to 5.00kHz, and the filter slope is set to a 12dB/Oct. The automatic gain correction is set at 0.00dB.

The bass track for “View From Seventh Heaven” was recorded onto track two of the production mix of the piece. Track two is panned to the center and mixed at a volume level of +3.5dB on the mixing console. Just as the other pieces, the backing bass tracks were recorded first and the solo section was recorded second within the same track. Presonus’s compressor and Ampire are the two inserts applied to the track. Ampire’s “default” preset on this track is adjusted for a bass guitar cabinet simulation to obtain a slight distortion. The adjustments use an amplifier simulation from their “Vintage British” amplifier head through a 4x12, a speaker cabinet with four twelve-inch speakers. The signal is sent through the amp head “B” with the drive set to 7.45, the bass to 5.0, the mid to 5.0, the treble to 5.0, the presence to 5.0, and the gain to 7.5. The input and output gain knobs are both set to 0.00dB. The reverb pedal has its size set to 10%, its mix set to 10%, its low-cut set to 30.8Hz, its high-cut set to 20.0k, and its dampness set to 80%. The Presonus Compressor is applied to this track using the “Bass—Guitar” preset. This preset sets the reduction ratio to 9.9:1, the minimum level threshold to -18.00dB, the soft knee distance to 2.99dB, the makeup gain to 5.00dB, the mix level to 100%, the attack detection speed to 117 milliseconds, and the release detection speed to 339.9 milliseconds.

The bass track for “Thunder And Birdies” was also recorded onto track two of the production mix of the piece. Track two is panned to the center and mixed at a volume level of +2.2dB on the mixing console. Just as the other pieces, the backing bass tracks

were recorded first and the solo section was recorded second within the same track. Presonus's compressor and Ampire are the two inserts applied to the track. Ampire's "Clean" preset on this track is adjusted for a bass guitar cabinet simulation. The adjustments use an amplifier simulation from their "Clean British" amplifier head through a 2x10, a speaker cabinet with two ten-inch speakers, Bass cabinet. The signal is sent through the amp head "B" with the drive set to 6.5, the bass to 5.0, the mid to 4.9, the treble to 6.0, the presence to 6.2, and the gain to 7.6. The input and output gain knobs are both set to 0.00dB. The Presonus Compressor is applied to this track using the "Bass—Guitar" preset. This preset sets the reduction ratio to 9.9:1, the minimum level threshold to -18.00dB, the soft knee distance to 2.99dB, the makeup gain to 5.00dB, the mix level to 100%, the attack detection speed to 117 milliseconds, and the release detection speed to 339.9 milliseconds.

The bass track for "Got A Match?" was also recorded onto track two of the production mix of the piece. Track two is panned ten degrees to the left, or "L10," to share the sonic stage with the clavinet part on the mirroring side. The track was mixed at a volume level of +6.7dB on the mixing console. Just as the other pieces, the backing bass tracks were recorded first and the solo section was recorded second within the same track. Ampire, Presonus's compressor, and OpenAIR are the three inserts applied to the track. Ampire's "Clean" preset on this track is adjusted for a bass guitar cabinet simulation. The adjustments use an amplifier simulation from their "Clean British" amplifier head through a 2x10, a speaker cabinet with two ten-inch speakers, Bass cabinet. The signal is sent through the amp head "B" with the drive set to 6.5, the bass to 5.0, the mid to 4.9, the treble to 6.0, the presence to 6.2, and the gain to 7.6. The input

and output gain knobs are both set to 0.00dB. The Presonus Compressor is applied to this track using the “Bass—Guitar” preset. This preset sets the reduction ratio to 9.9:1, the minimum level threshold to -18.00dB, the soft knee distance to 2.99dB, the makeup gain to 5.00dB, the mix level to 100%, the attack detection speed to 117 milliseconds, and the release detection speed to 339.9 milliseconds. OpenAir uses the preset “Toght Space” and provides a pre-delay offset of 0 milliseconds, a length offset of 2.97 seconds, an early reflections/late reverb balance of 0.50, the gain set to 0.00dB, with a mix of 17.5%. The envelope is set to fade-in for 0 milliseconds, contain an early reflections/late reverb-crossover of 15.9 milliseconds, and a fade-out of 100 milliseconds. The processing cross-feed is set to 30%, the cross-delay at 10.0 milliseconds, and the asymmetry is centered. Low shelf frequency is set to 120Hz, the low-mid frequency is set to 400Hz, the mid-high frequency is set to 1.20kHz, and the high shelf frequency is set to 6.80kHz.

“Searching, Finding” contains two bass tracks, the six-string bass on track two and the fretless bass on track three. The six-string bass part is panned left ten degrees, or “L10,” to share the sonic stage with the saxophone. Track two sits at a mix volume of +6.7dB on the mixing console. Just as the other pieces, the backing bass tracks were recorded first, and the solo section was recorded second within the same track. Track two contains the inserts Ampire, Presonus’s compressor, and OpenAIR. Ampire’s “Clean” preset on this track is adjusted for a bass guitar cabinet simulation. The adjustments use an amplifier simulation from their “Clean British” amplifier head through a 2x10, a speaker cabinet with two ten-inch speakers, Bass cabinet. The signal is sent through the amp head “B” with the drive set to 6.5, the bass to 5.0, the mid to 4.9, the treble to 6.0, the presence to 6.2, and the gain to 7.6. The input and output gain knobs are both set to

0.00dB. The Presonus Compressor is applied to this track using the “Bass—Guitar” preset. This preset sets the reduction ratio to 9.9:1, the minimum level threshold adjusted to -18.00dB, the soft knee distance to 2.99dB, the makeup gain to 5.00dB, the mix level to 100%, the attack detection speed to 117 milliseconds, and the release detection speed to 339.9 milliseconds. OpenAir uses the preset “Toght Space” and provides a pre-delay offset of 0 milliseconds, a length offset of 2.97 seconds, an early reflections/late reverb balance of 0.50, the gain set to 0.00dB, with a mix of 17.5%. The envelope is set to fade-in for 0 milliseconds, contain an early reflections/late reverb-crossover of 15.9 milliseconds, and a fade-out of 100 milliseconds. The processing cross-feed is set to 30%, the cross-delay at 10.0 milliseconds, and the asymmetry is centered. Low shelf frequency is set to 120Hz, the low-mid frequency is set to 400Hz, the mid-high frequency is set to 1.20kHz, and the high shelf frequency is set to 6.80kHz.

The fretless bass part of “Searching, Finding” is panned center with a mix volume of +3.5dB. This track was recorded in one take and follows the notation found in Appendix N. Track three contains the inserts Ampire, ProEQ, Fat Channel, and Room Reverb. Ampire’s “default” preset on this track is adjusted for a bass guitar cabinet simulation. The adjustments use an amplifier simulation from their “Vintage British” amplifier head through a 2x10, a speaker cabinet with two ten-inch speakers, bass cabinet. The signal is sent through the amp head “A” with the drive set to 7.21, the bass to 5.0, the mid to 5.0, the treble to 5.0, the presence to 5.0, and the gain to 7.75. The input and output gain knobs are both set to 0.00dB. The reverb pedal has its size set to 10%, its mix set to 10%, its low-cut set to 30.8Hz, its high-cut set to 20.0k, and its dampness set to 80%. ProEQ is set to its preset, “Bass—Round And Deep,” with the low frequency filter

quality set to 1.00, the filter gain set to 6.66dB, the filter frequency set to 48Hz, and the filter type set to “peaking.” The mid frequency filter quality is set to 1.50, the filter gain is set to 15.35dB, and the filter frequency is set to 760kHz. The high frequency filter quality is set to 1.00, the filter gain is set to 0.00dB, the filter frequency is set to 11.00kHz, and the filter type is set to a 12dB shelf. The low-cut filter frequency is set to 31.3Hz, and the filter slope is set to a 48dB/Oct. The low mid frequency filter quality is set to 5.00, the filter gain is set to -24.00dB, and the filter frequency is set to 250Hz. The high mid frequency filter quality is set to 1.12, the filter gain is set to 6.00dB, and the filter frequency is set to 1.21kHz. The high cut filter frequency is set to 2.78kHz, and the filter slope is set to a 48dB/Oct. The automatic gain correction is set at 0.00dB.

Fat Channel is set to its “Upright” preset with its Compressor, Equalizer, and Limiter enabled. The compressor threshold is set to -14.05dB, its ratio is set to 2.7:1, the key filter is set to “off,” its attack and release are both set to “auto,” and its gain is set to 3.84dB. The equalizer’s low frequency is set to register a frequency of 135.4Hz, the gain at -0.06dB, and its filter quality at 0.63. The low-mid frequency is set to register a frequency of 233.8Hz, the gain at -6.41dB, and its filter quality set to 4.00. The high-mid frequency is set to register a frequency of 504.3Hz, the gain at -5.47dB, and its filter quality set to 4.00. The high frequency is set to register a frequency of 2.29kHz, the gain set to 0.18dB, and a filter quality of 0.63. The limiter is also set to -3.84dB. Room Reverb preset “Concert Hall” applied. This preset provides the track a mean room size of 20.00 meters, 1.78 meters wide, and 1.00 meters in height. The relative source-listener distance is set to 0.68, and the relative height acoustic plane is set to 0.73. This preset replicates a large room which is 29.39 meters wide, 16.50 meters deep, and 16.50 meters in height.

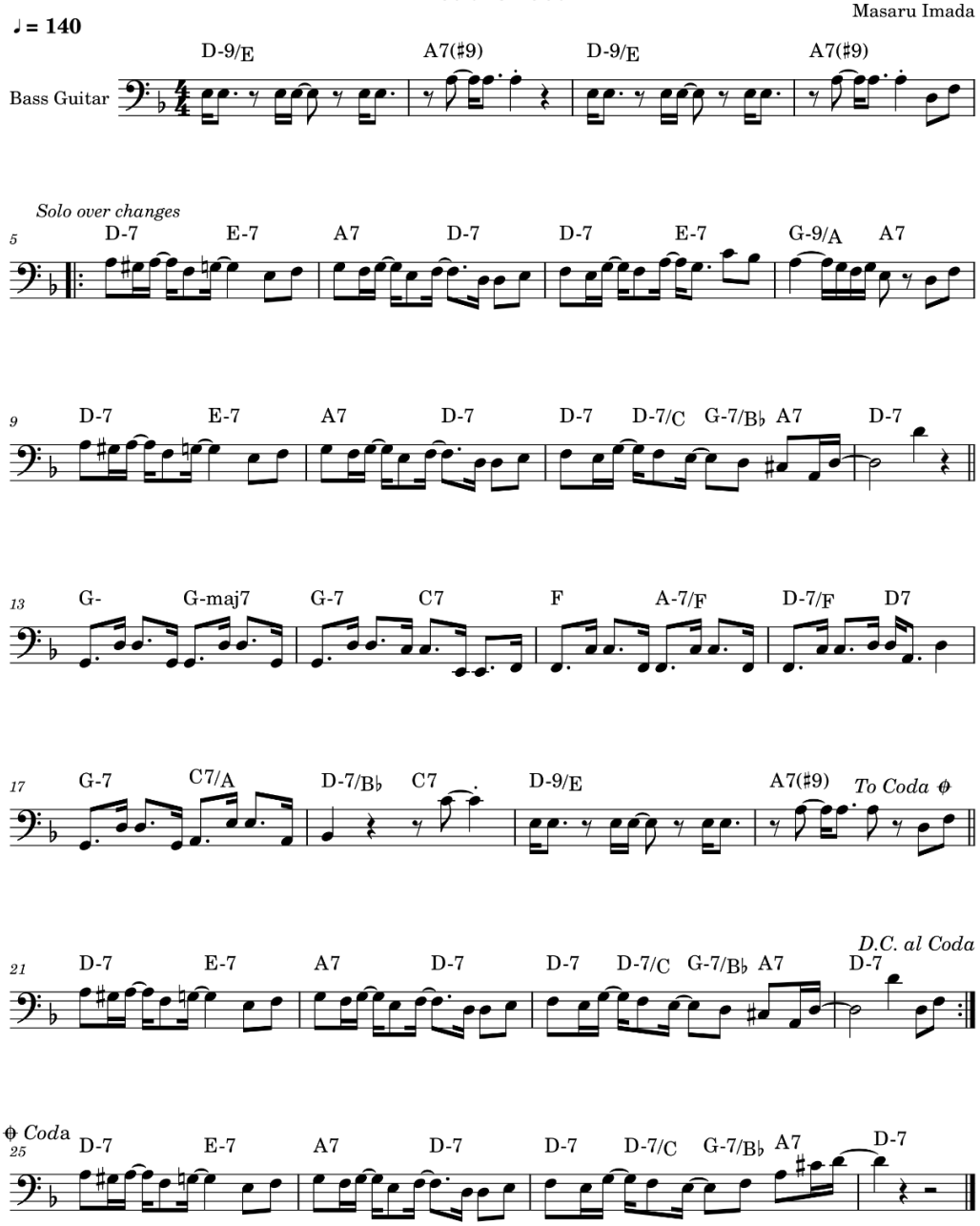
The resulting tail-pre-delay is set to 54 milliseconds, the resulting tail-length is set to 2.24 seconds. The character options are set to a dampness, or humidity, of 0.33, a population, or bass/movement, of 0.73, and the reflexivity is set to 0.68. The early reflections/late reverb balance is set to 0.50, and the effect depth, or dry/wet mix is set to 20.0%.

Appendix A: “Tropical Butterfly” Lead Sheet Transcription

# Tropical Butterfly

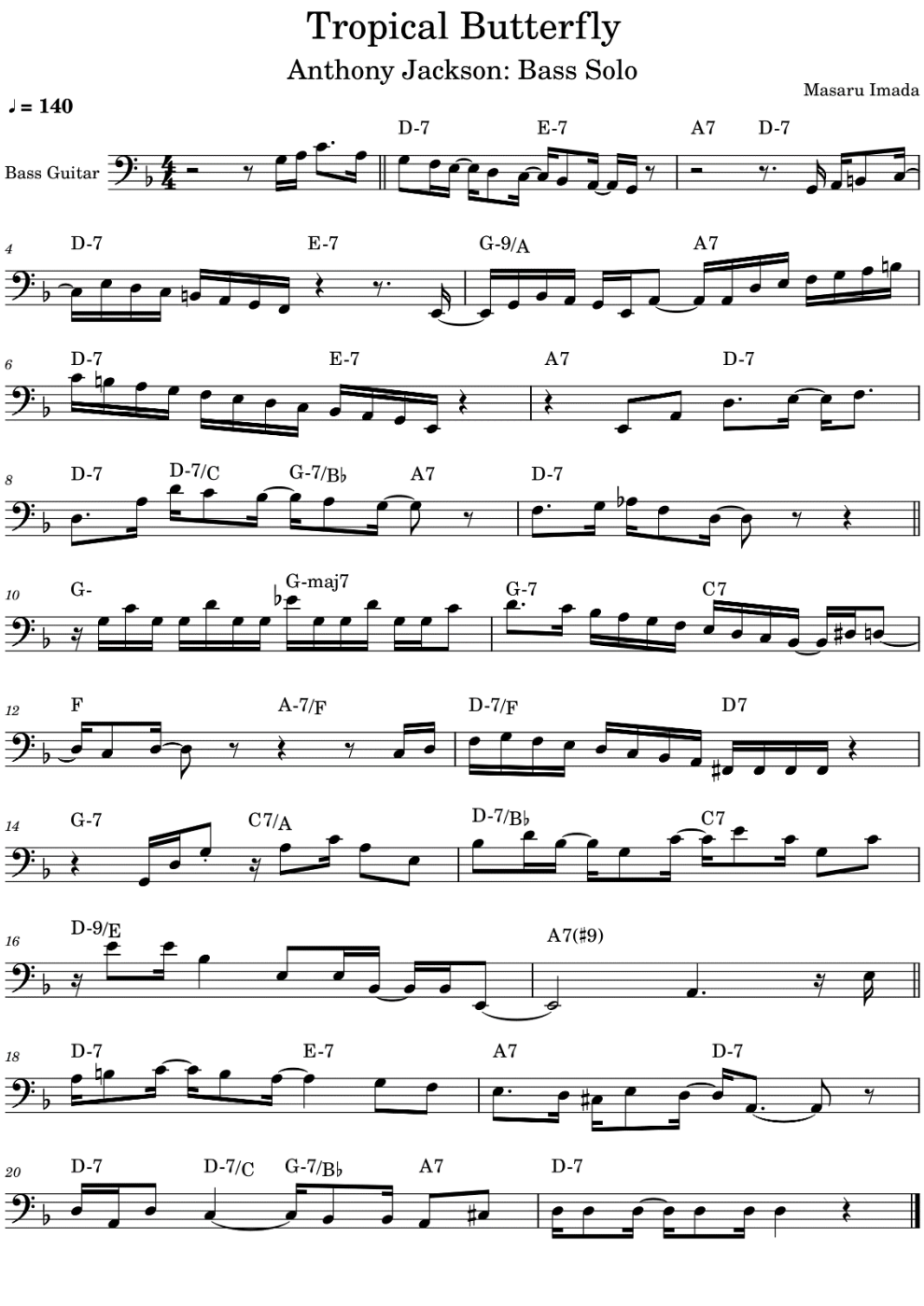
## Lead Sheet

Masaru Imada




1982 Full House (PAP-25026)

Appendix B: “Tropical Butterfly” Bass Solo Transcription



Appendix C: “Tropical Butterfly” Bass Comping Transcription

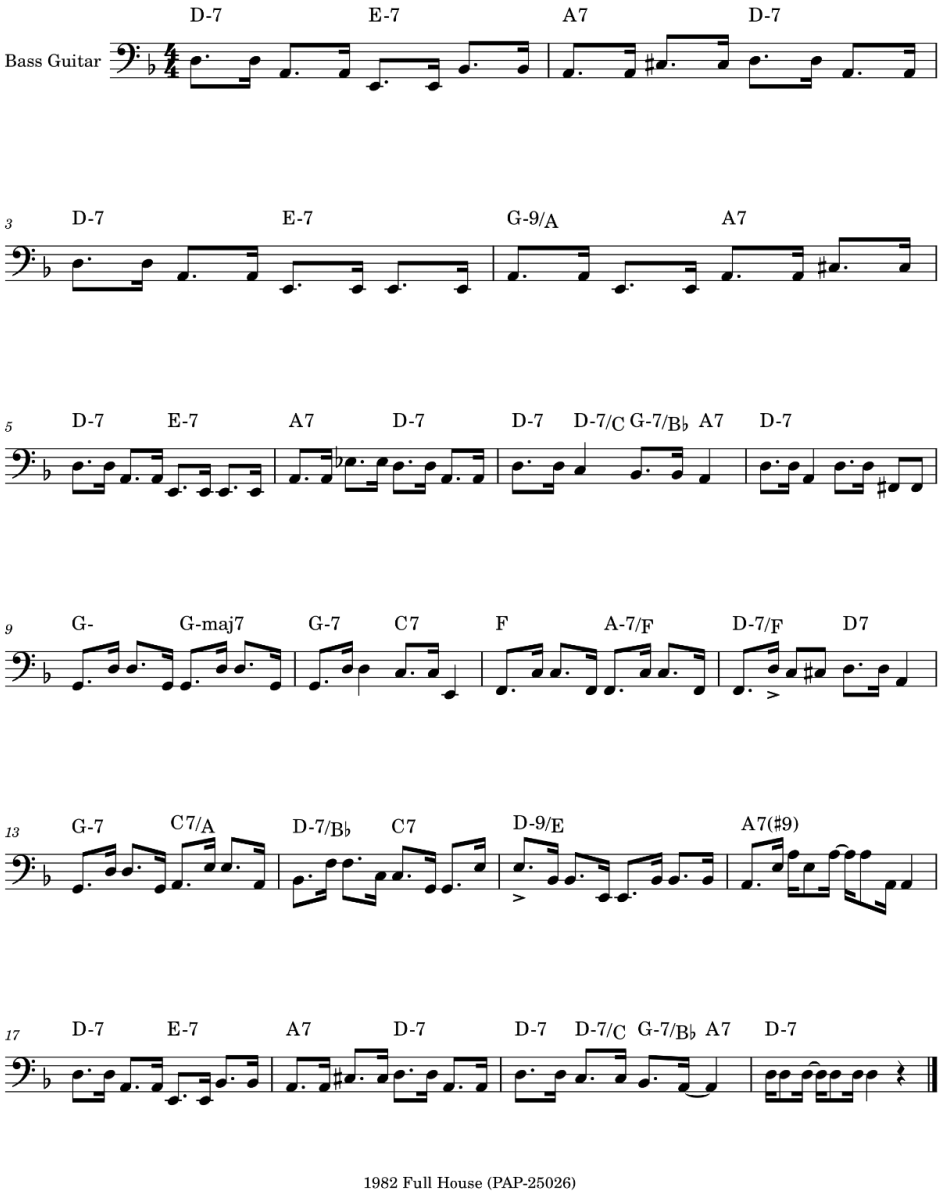
# Tropical Butterfly

## Anthony Jackson: Bass Comping

Masaru Imada

**Figure 1: Guitar Solo**

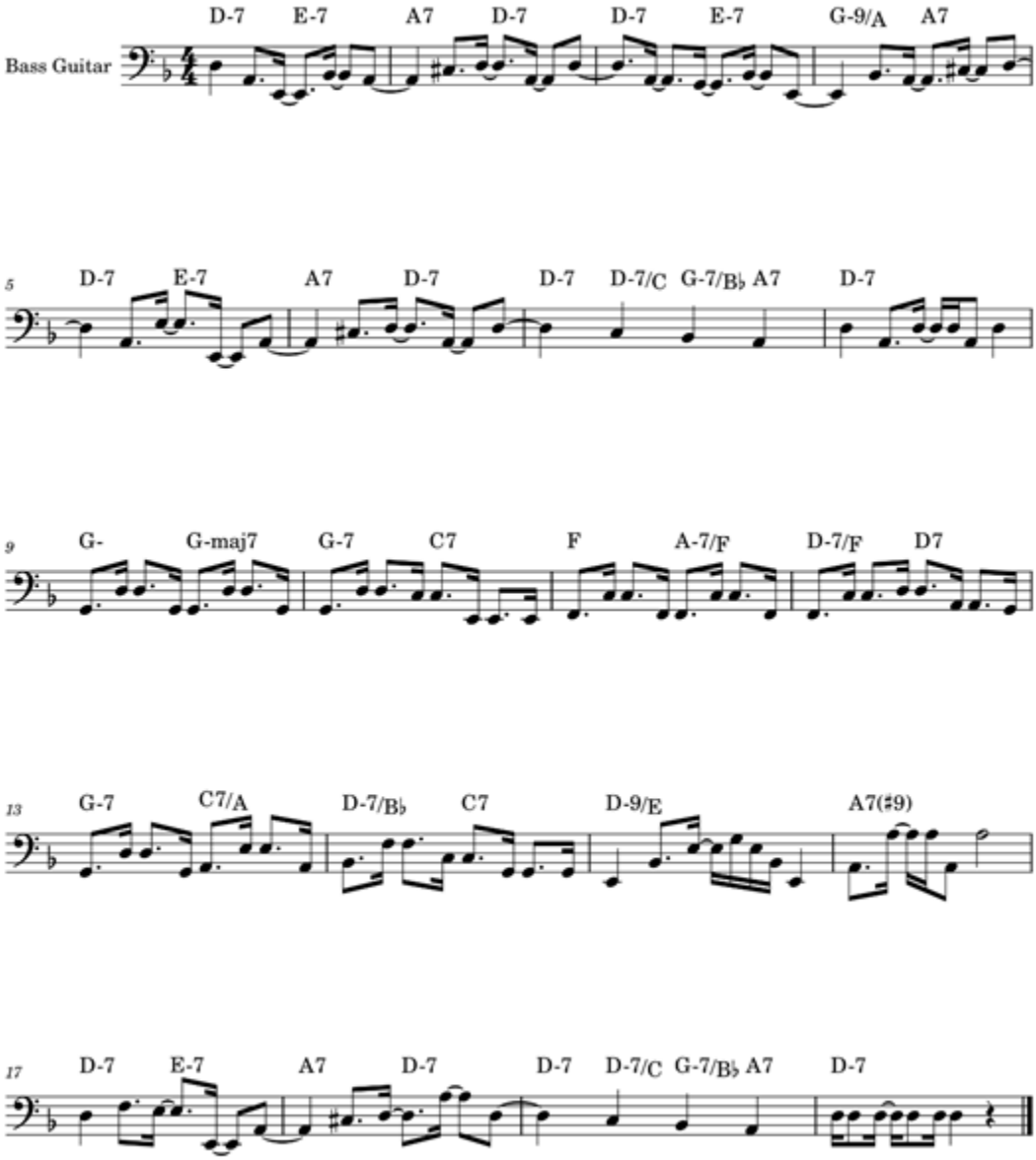
♩ = 140




1982 Full House (PAP-25026)

**Figure 2: Synth Solo**

♩ = 140

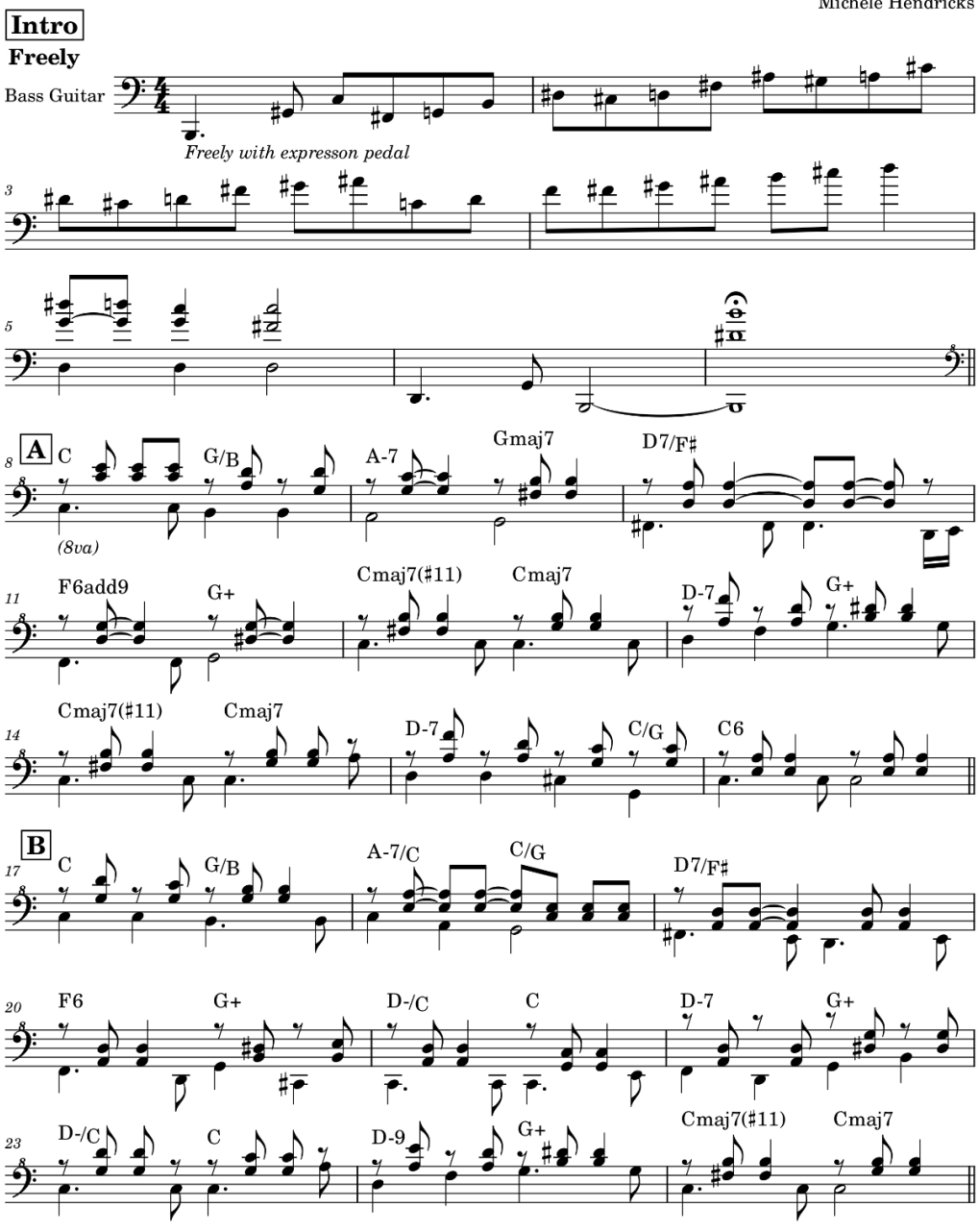


Appendix D: “If It’s Magic” Accompaniment Transcription

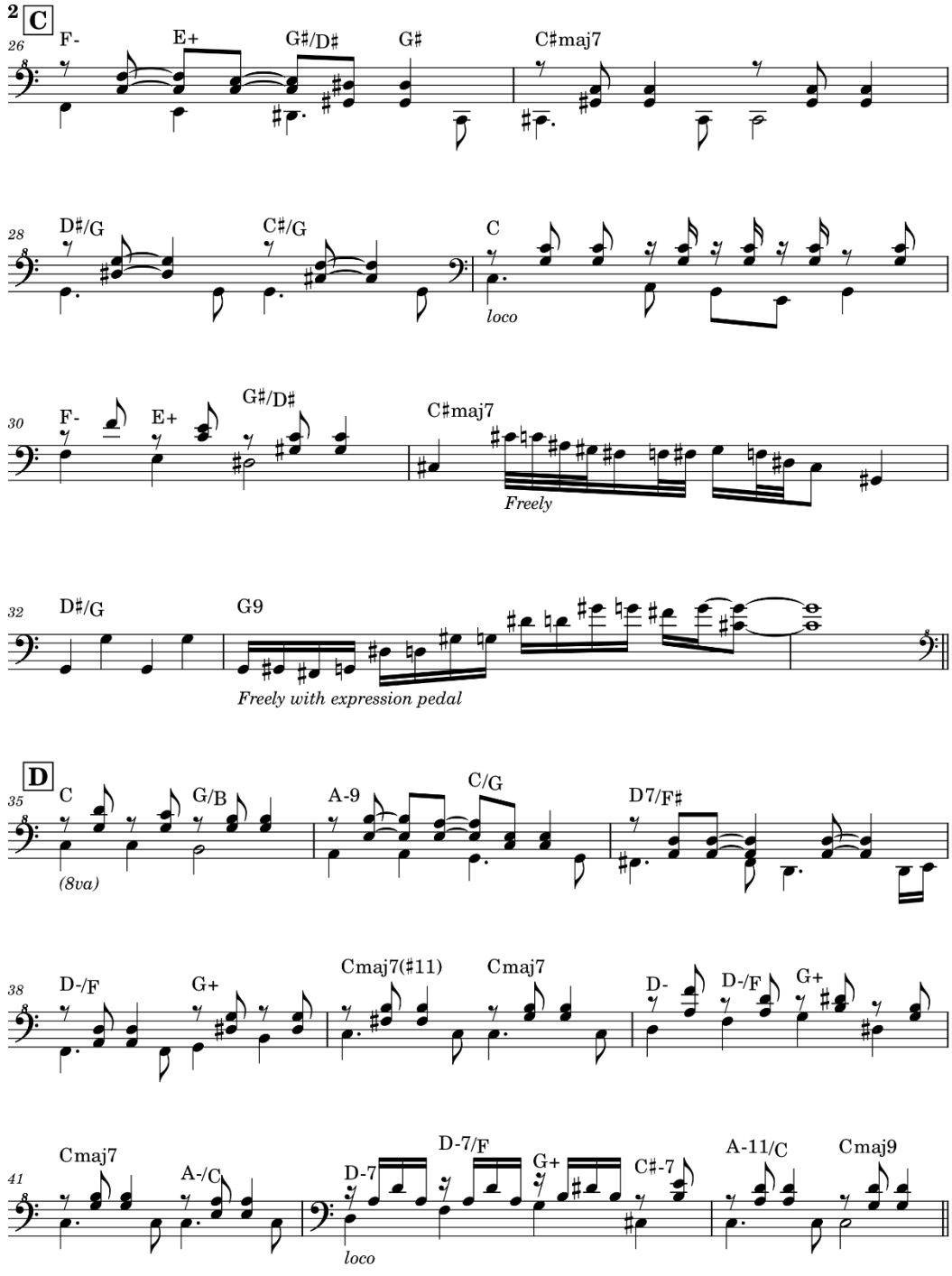
# If It's Magic

## Anthony Jackson: Bass Accompaniment

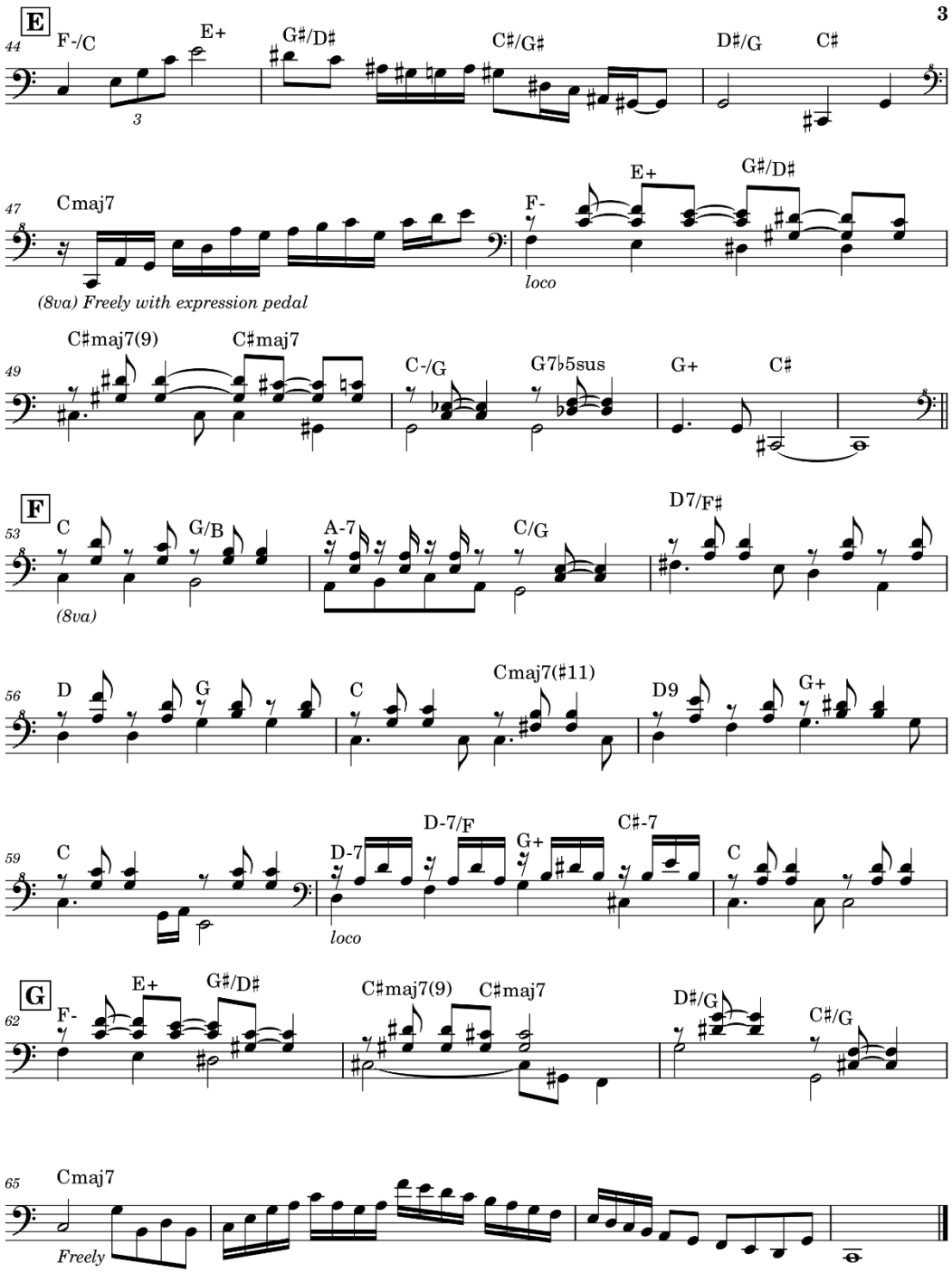
Michele Hendricks




1988 Muse Records (MCD 5363)




1988 Muse Records (MCD 5363)




1988 Muse Records (MCD 5363)

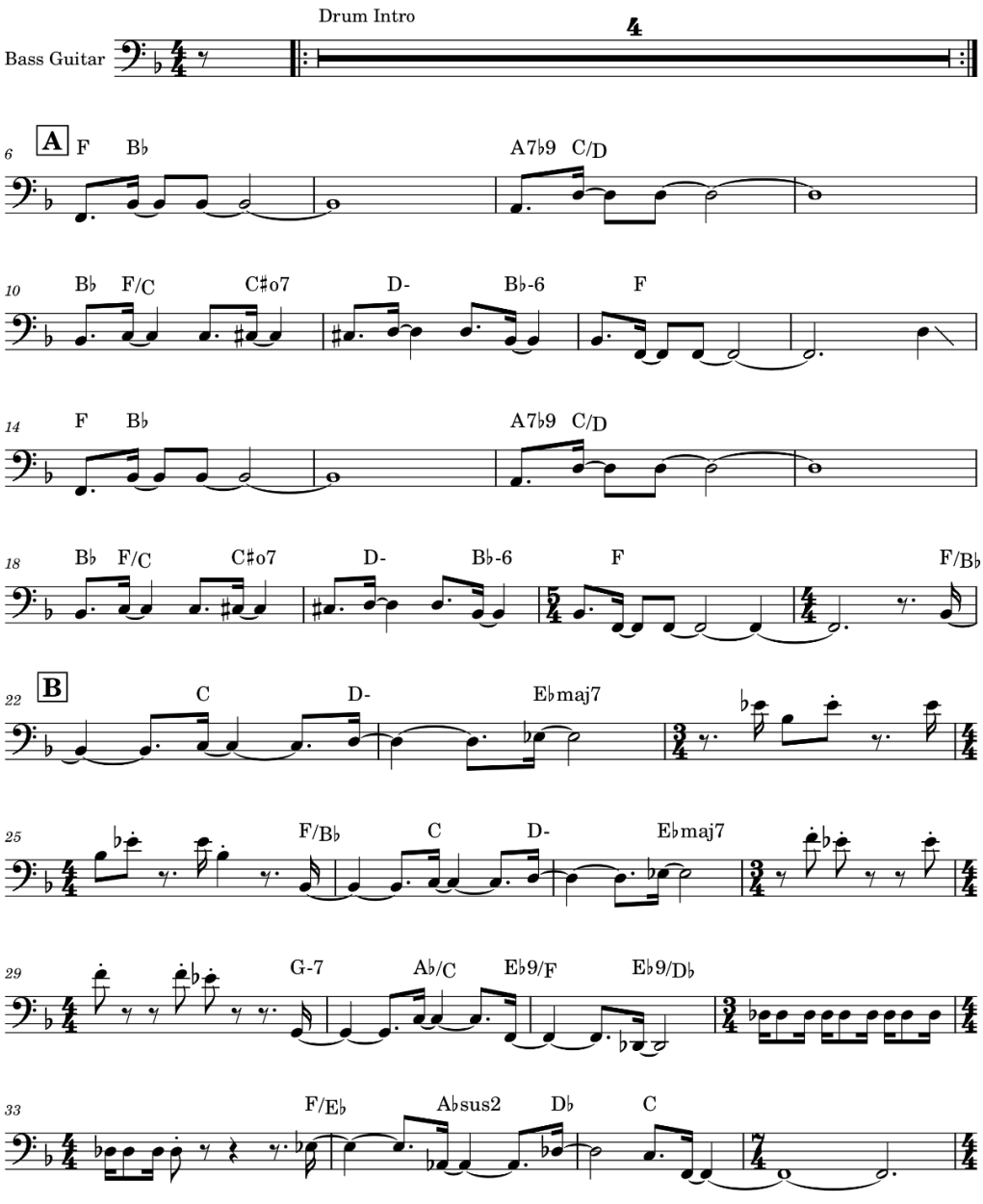
Appendix E: “Thunder And Birdies” Lead Sheet Transcription

# Thunder And Birdies

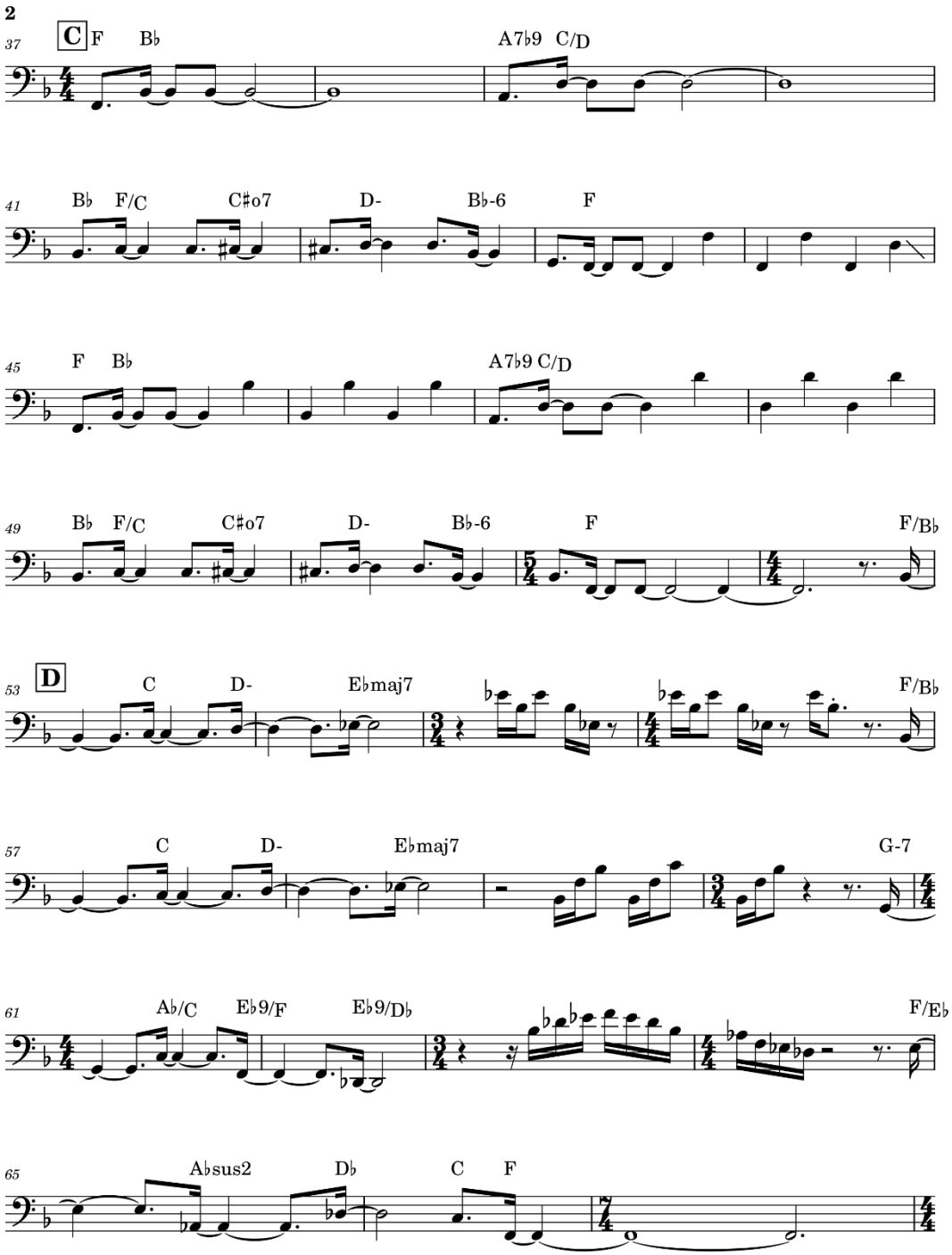
## Lead Sheet

Flim & the BB's

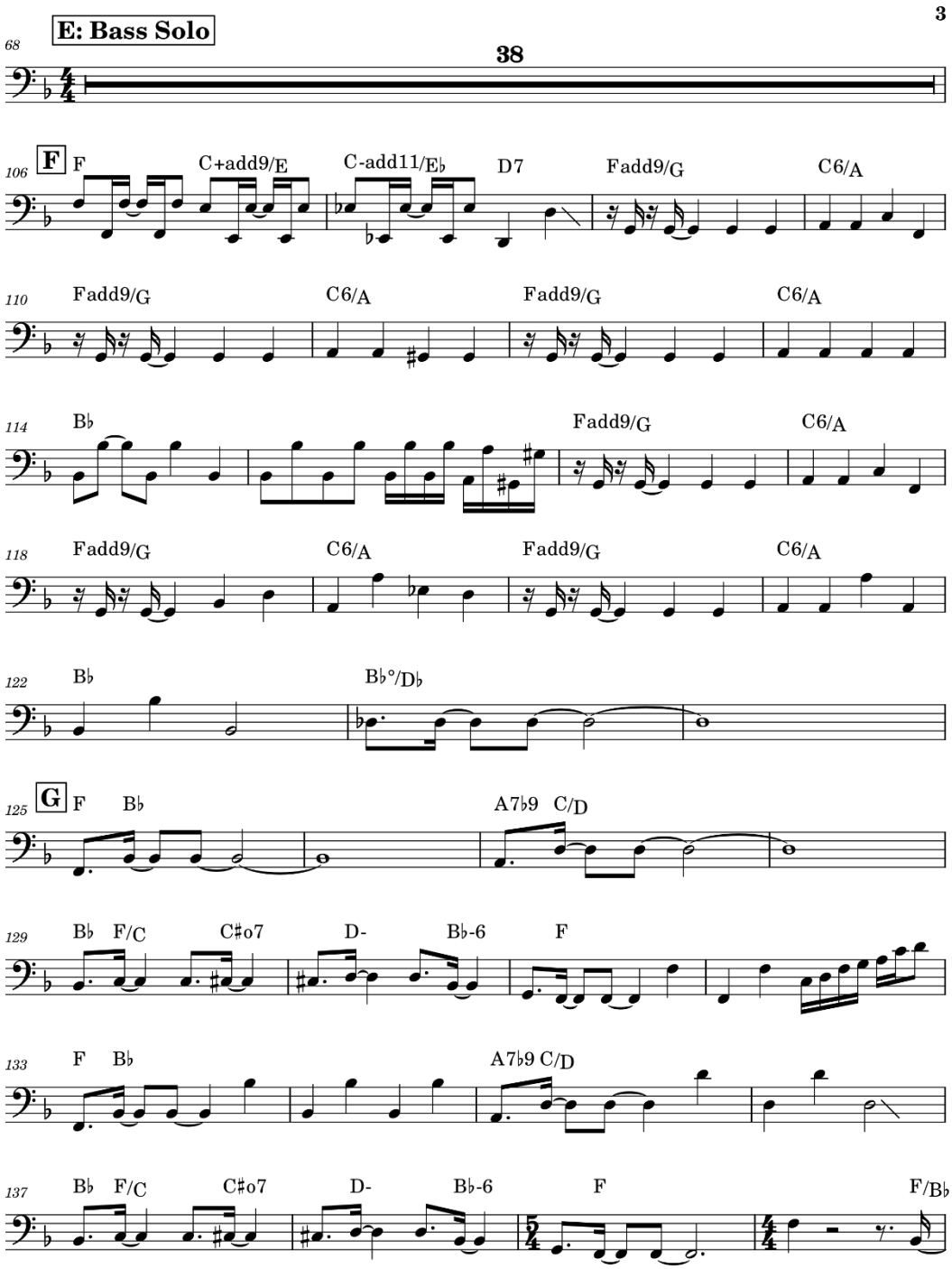
♩ = 135



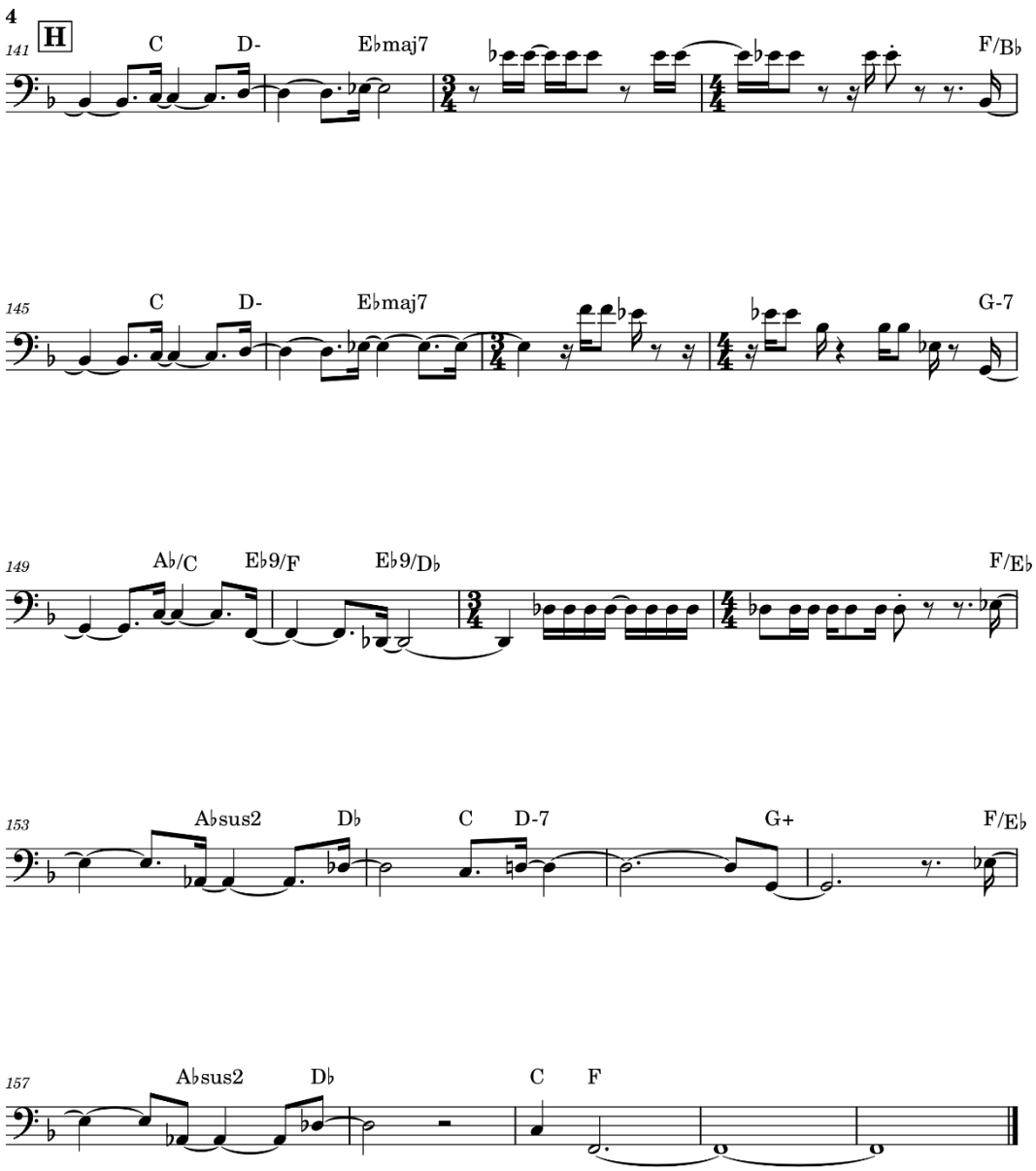

1983 DMP (CD-443)




1983 DMP (CD-443)




1983 DMP (CD-443)


4
H
141
C
D-
Ebmaj7
F/Bb
145
C
D-
Ebmaj7
G-7
149
Ab/C
Eb9/F
Eb9/Db
F/Eb
153
Absus2
Db
C
D-7
G+
F/Eb
157
Absus2
Db
C
F

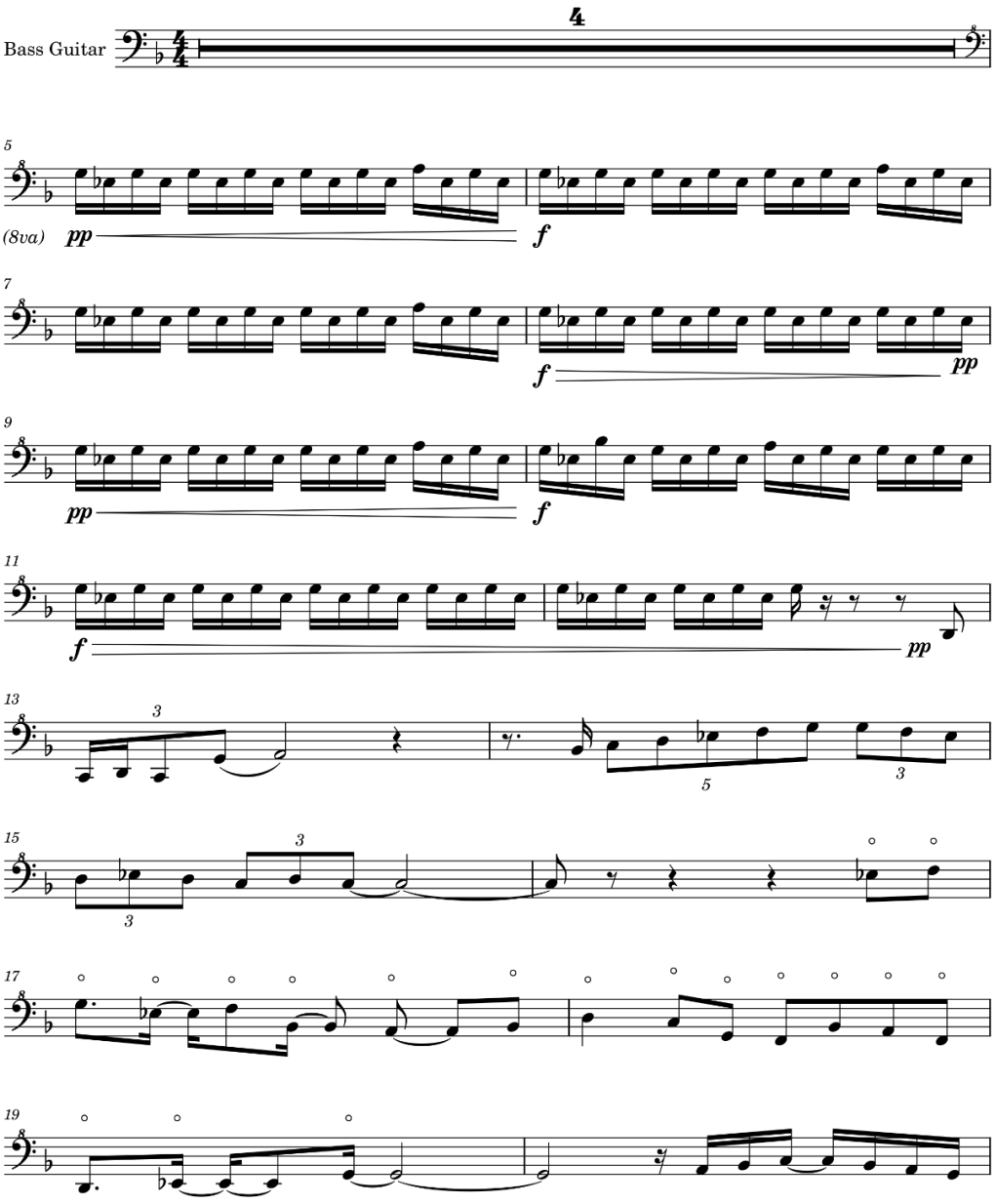
Appendix F: “Thunder And Birdies” Bass Solo Transcription

# Thunder And Birdies

## Jimmy Johnson: Bass Solo

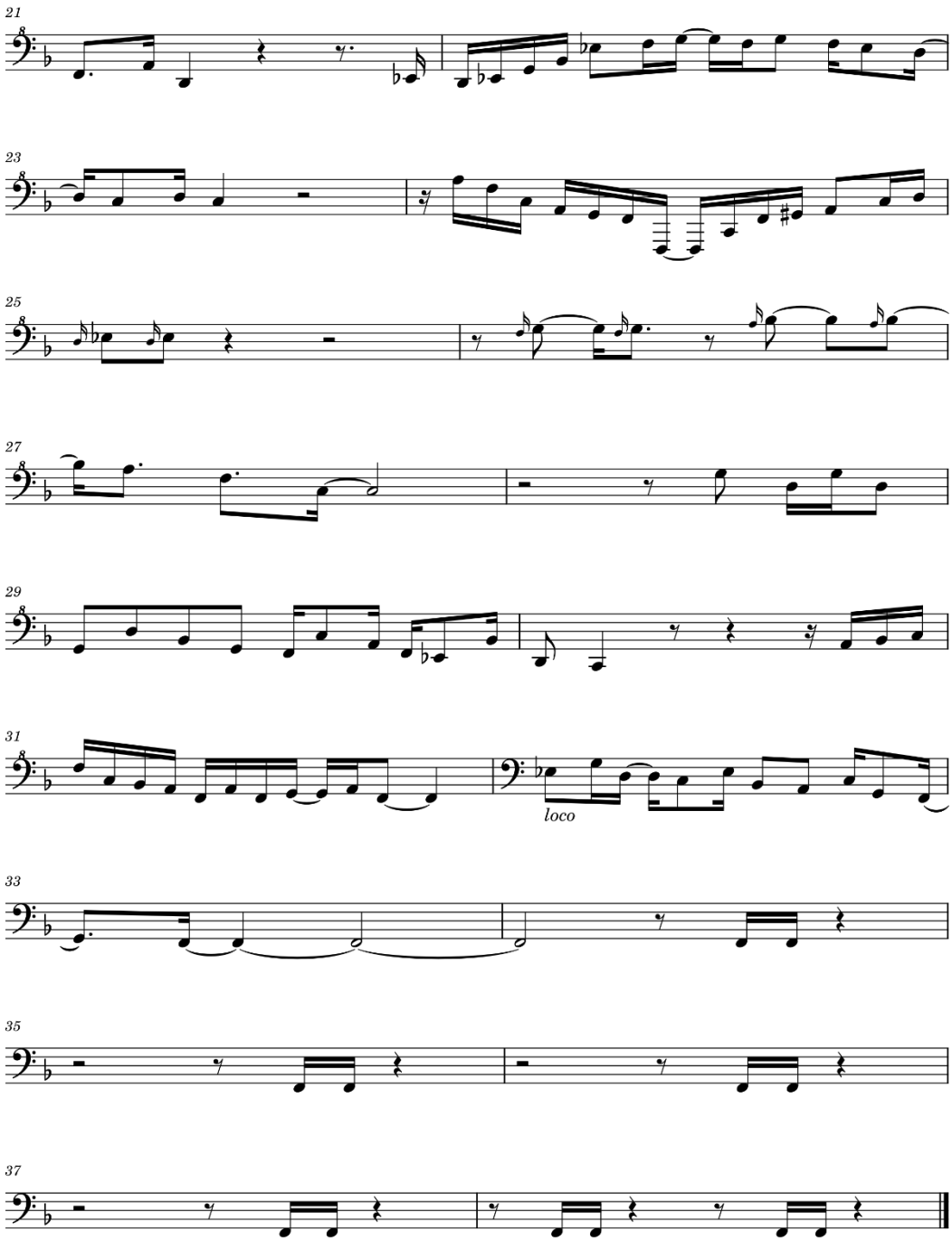
Flim & the BB's

♩= 135



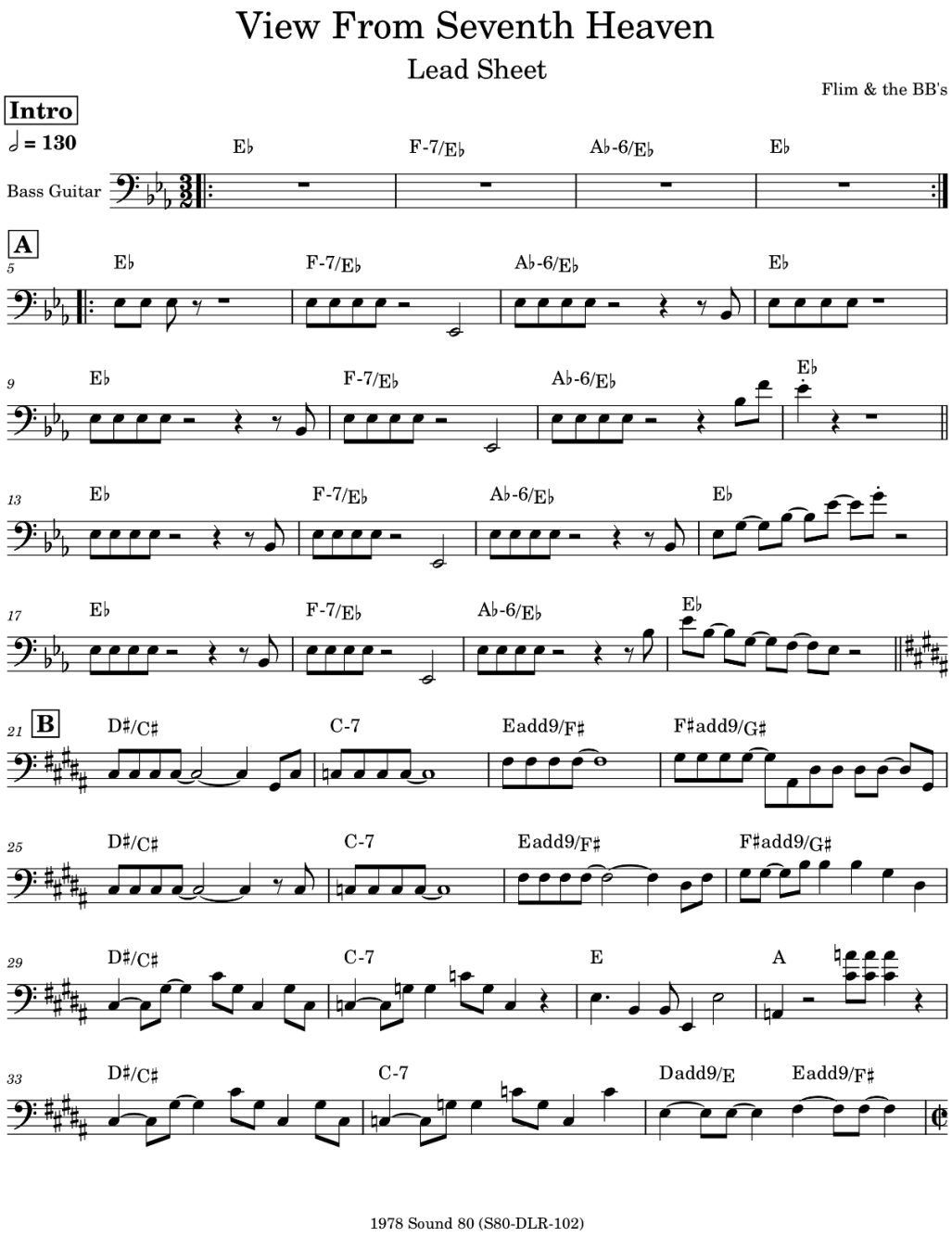

1983 DMP (CD-443)

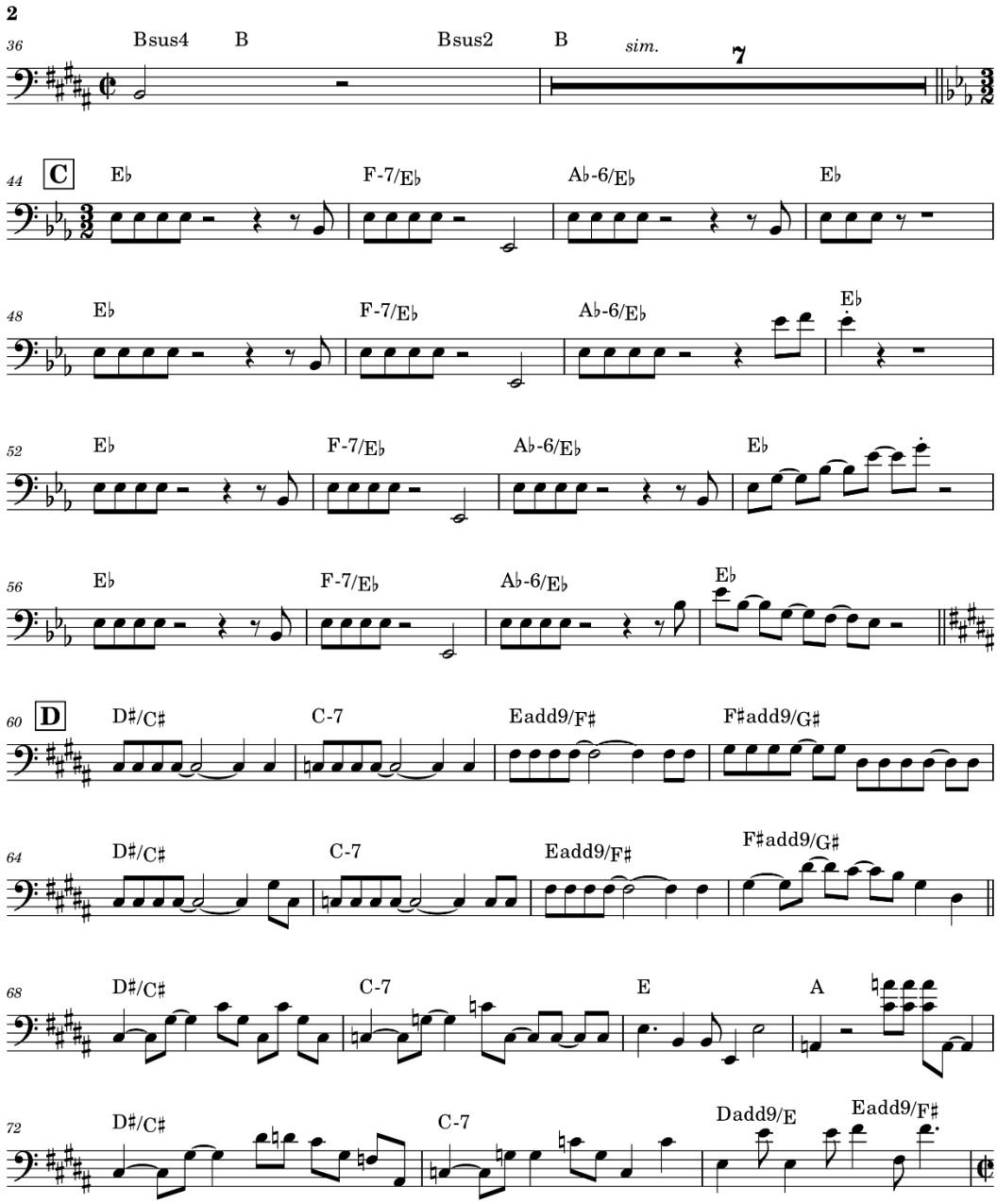
**2**



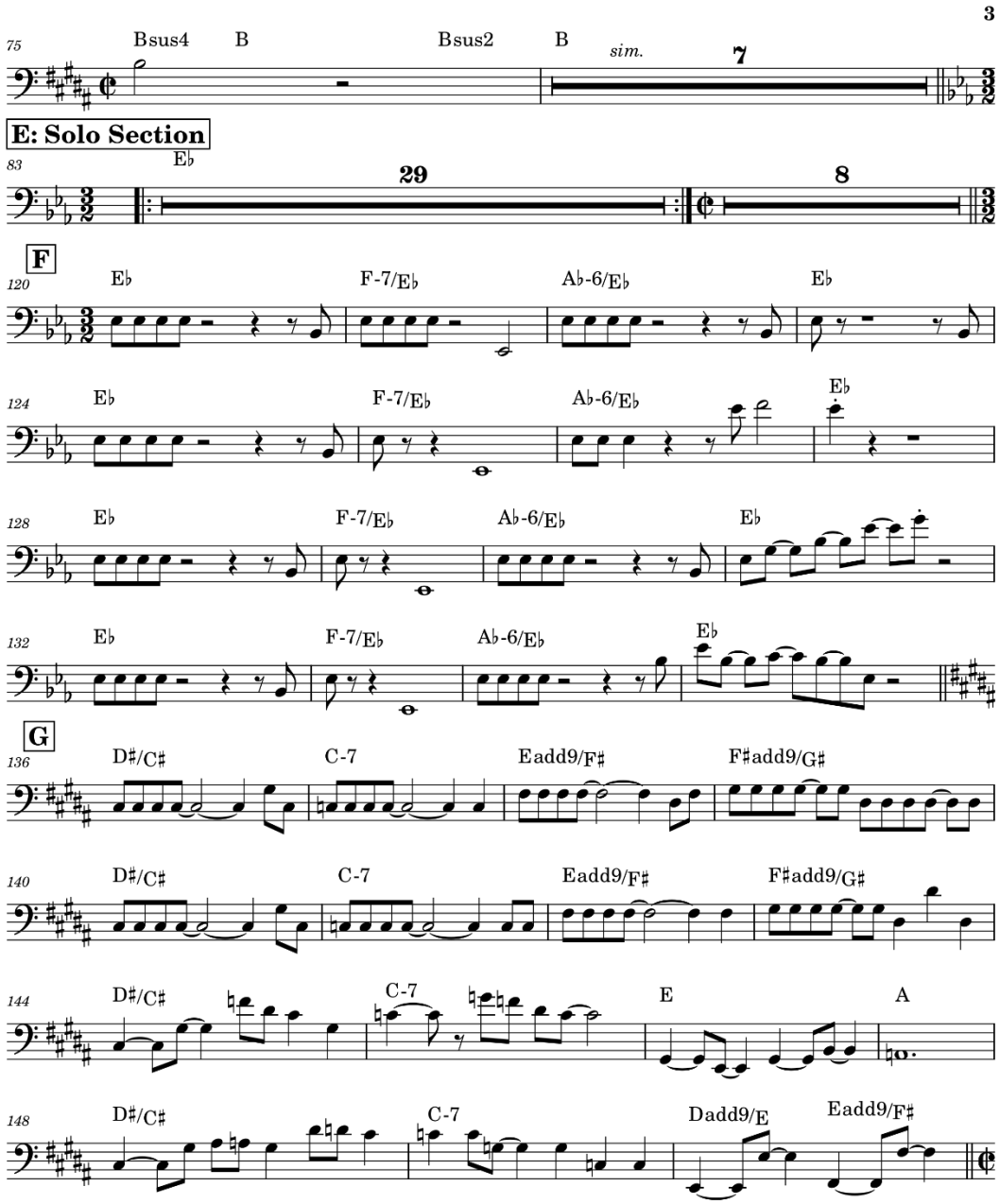

1983 DMP (CD-443)

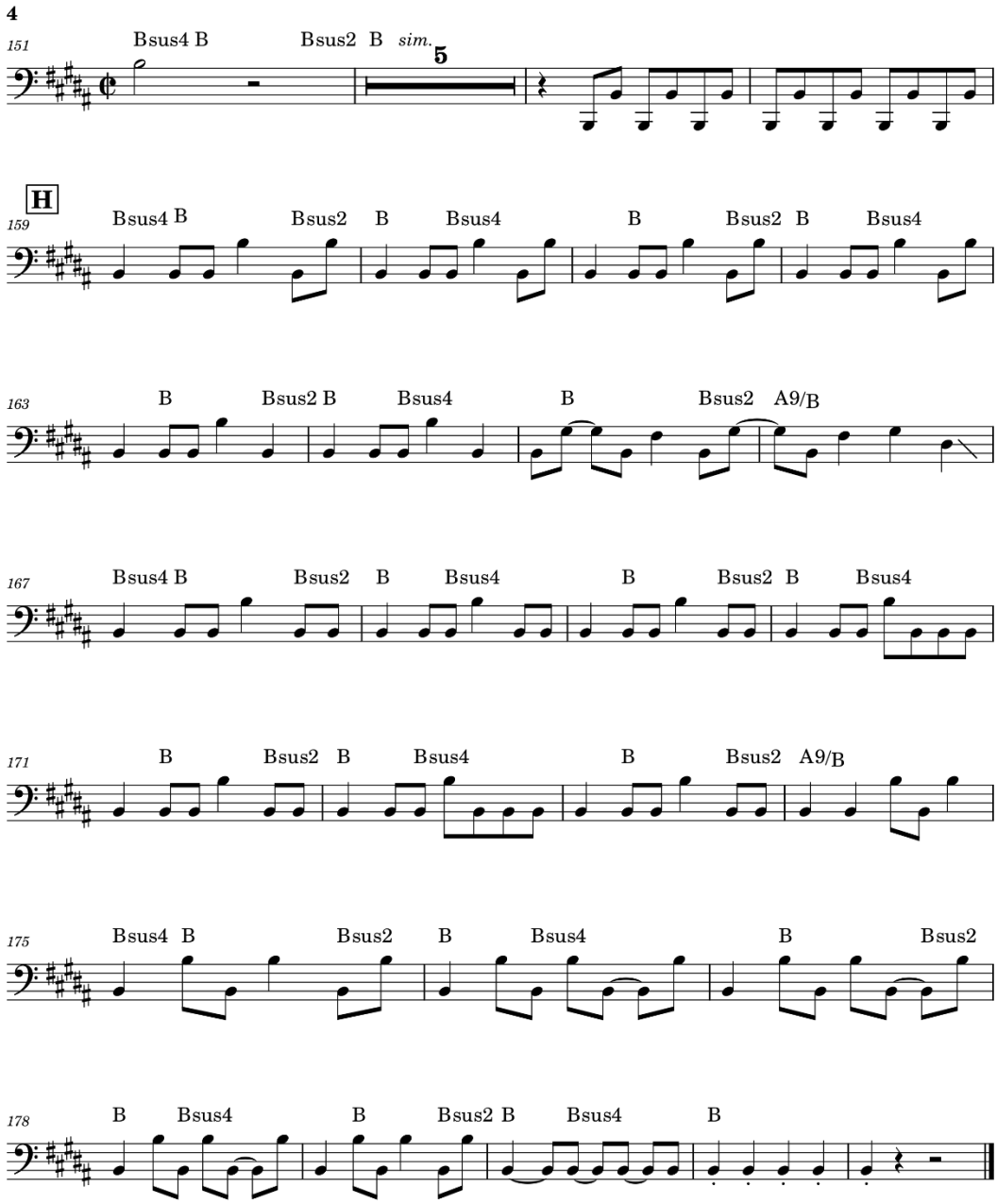
Appendix G: “View From Seventh Heaven” Lead Sheet Transcription






1978 Sound 80 (S80-DLR-102)


3
75
Bsus4
B
Bsus2
B
sim.
7
E: Solo Section
83
E♭
29
8
F
120
E♭
F-7/E♭
A♭-6/E♭
E♭
124
E♭
F-7/E♭
A♭-6/E♭
E♭
128
E♭
F-7/E♭
A♭-6/E♭
E♭
132
E♭
F-7/E♭
A♭-6/E♭
E♭
G
136
D♯/C♯
C-7
Eadd9/F♯
F♯add9/G♯
140
D♯/C♯
C-7
Eadd9/F♯
F♯add9/G♯
144
D♯/C♯
C-7
E
A
148
D♯/C♯
C-7
Dadd9/E
Eadd9/F♯




1978 Sound 80 (S80-DLR-102)

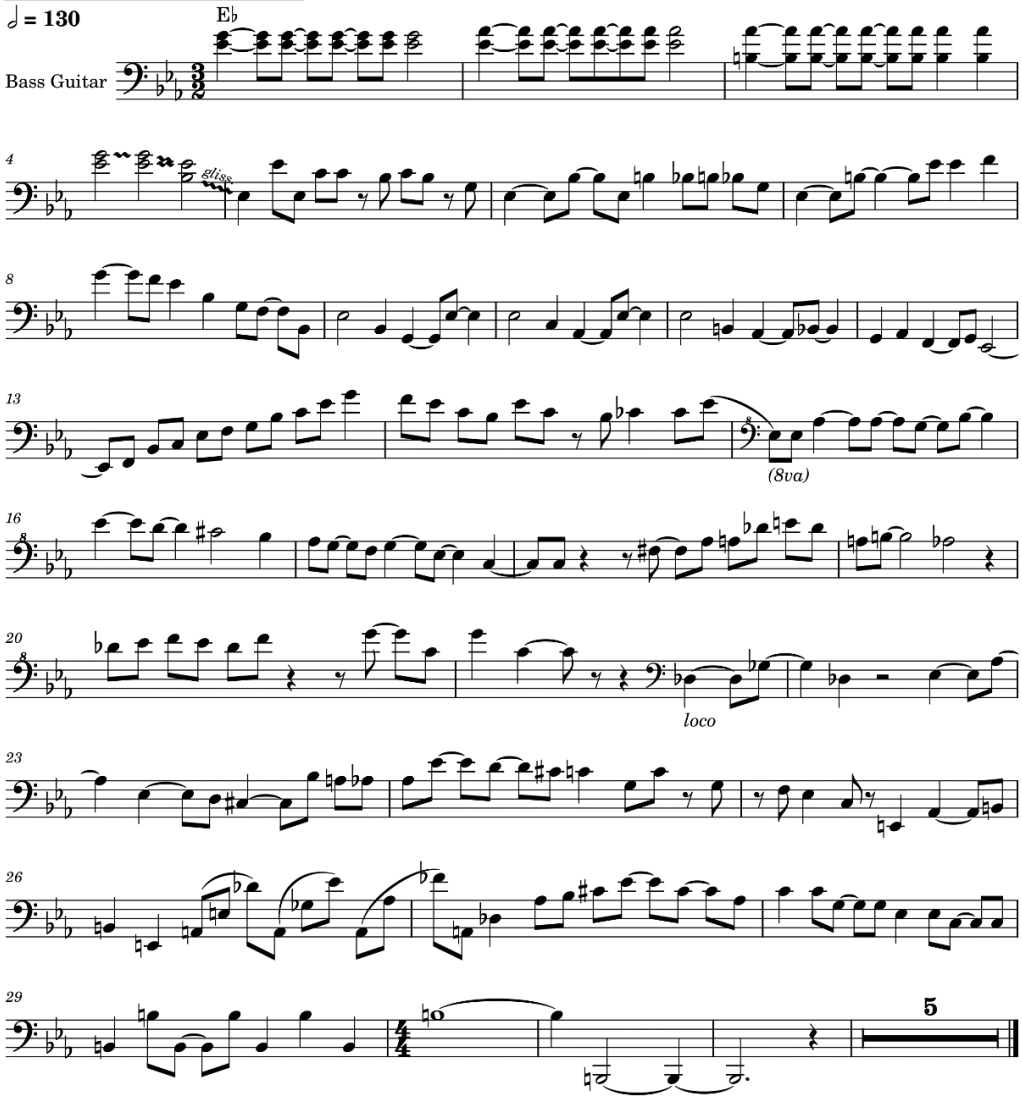
Appendix H: “View From Seventh Heaven” Bass Solo Transcription

# View From Seventh Heaven

Jimmy Johnson: Bass Solo

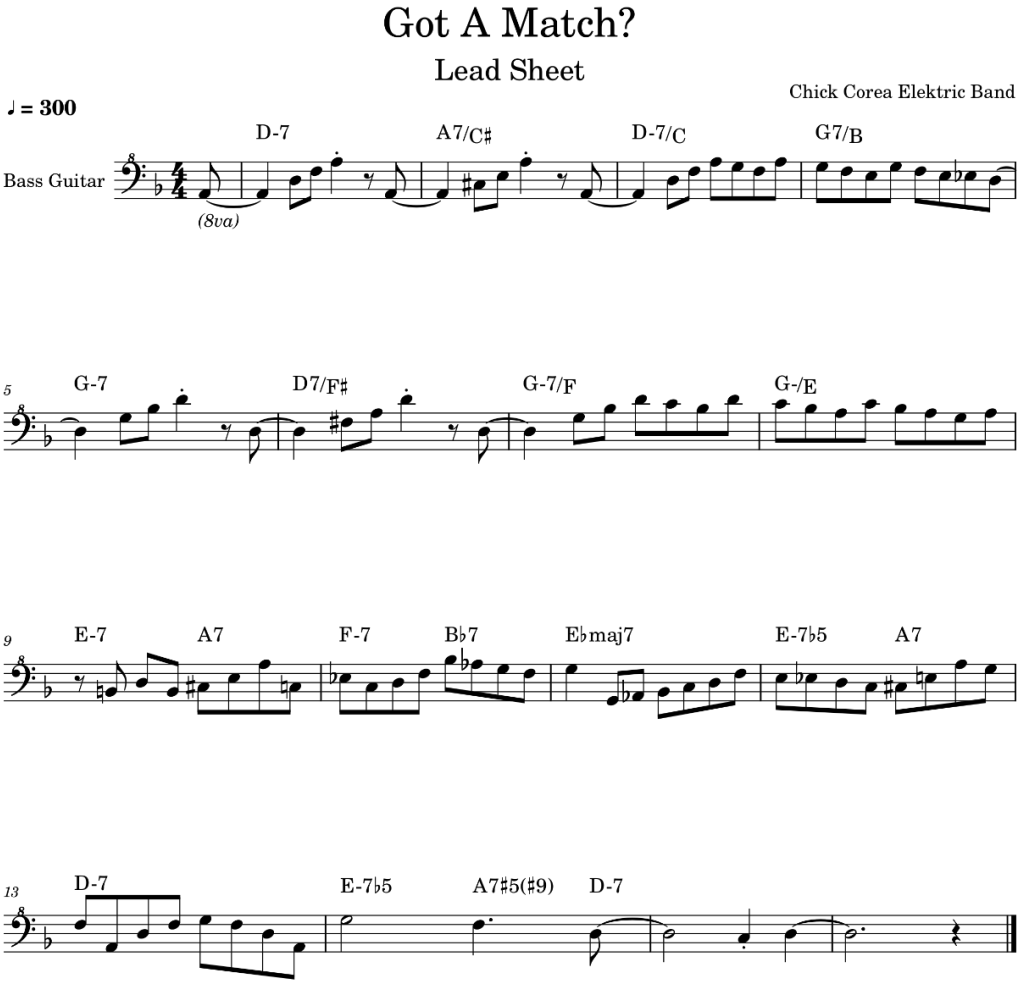
Flim & the BB's

**Figure 1: Solo Section**



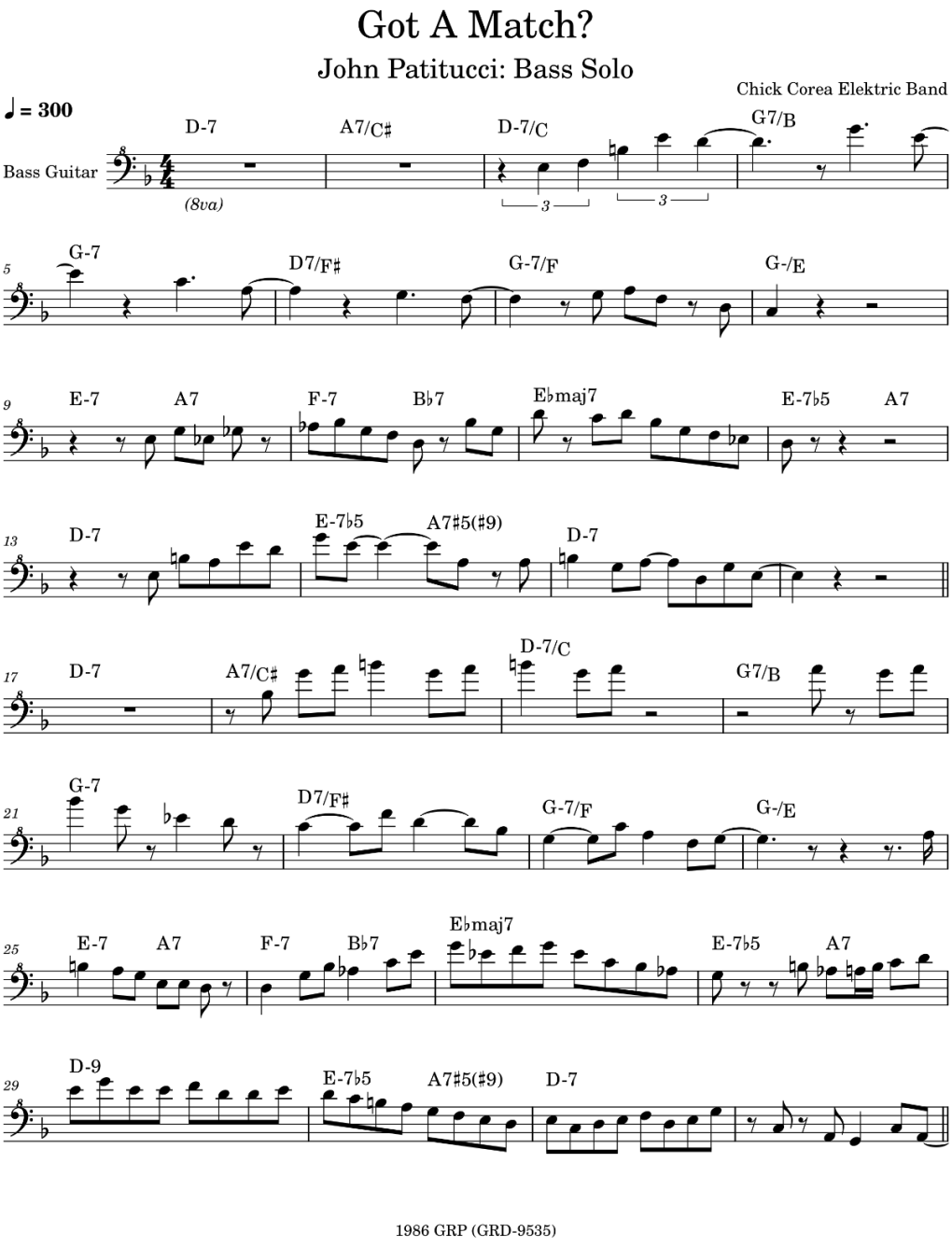

1978 Sound 80 (S80-DLR-102)

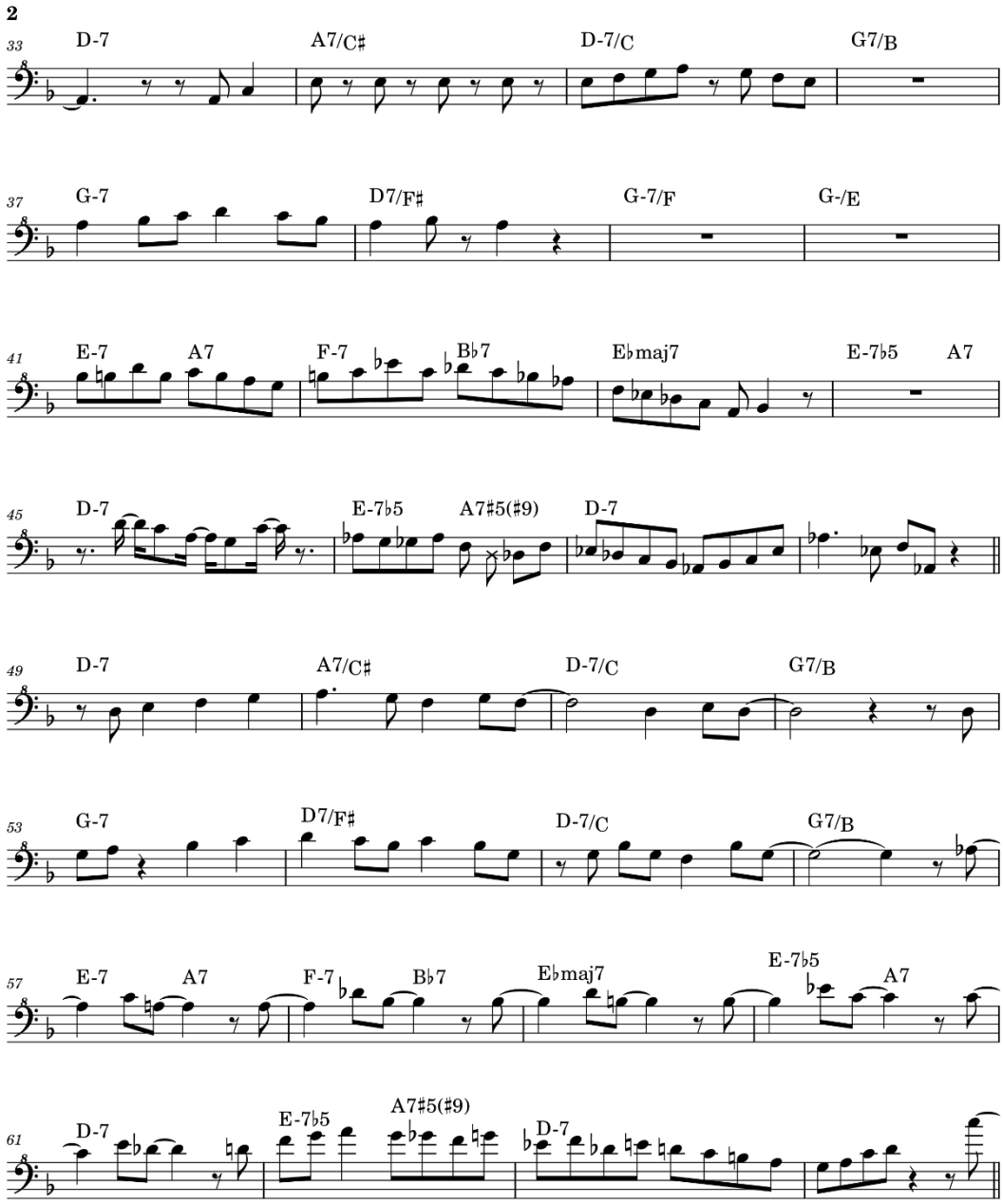
Appendix I: “Got A Match?” Lead Sheet Transcription



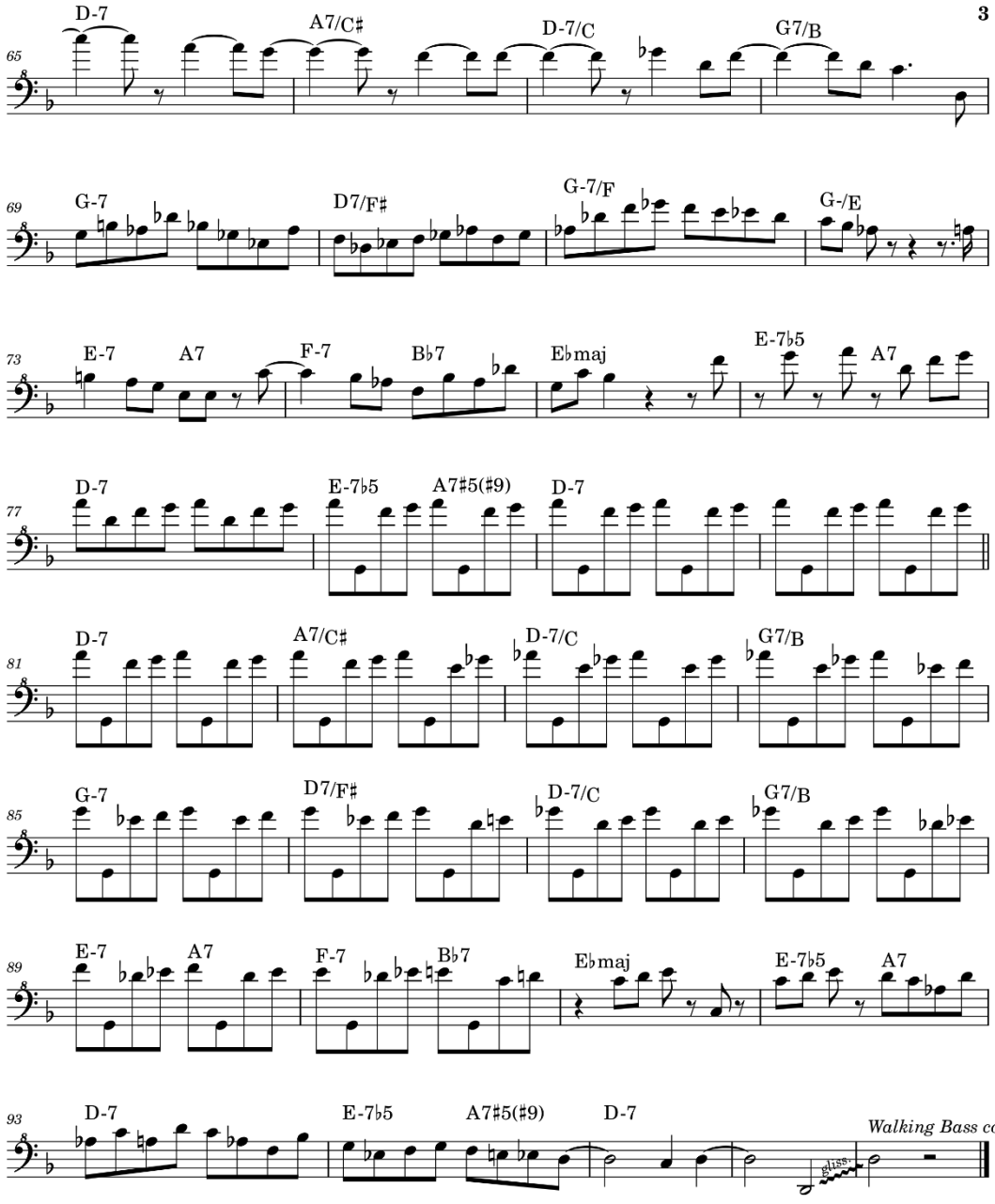

1986 GRP (GRD-9535)

Appendix J: “Got A Match?” Bass Solo Transcription






1986 GRP (GRD-9535)




1986 GRP (GRD-9535)

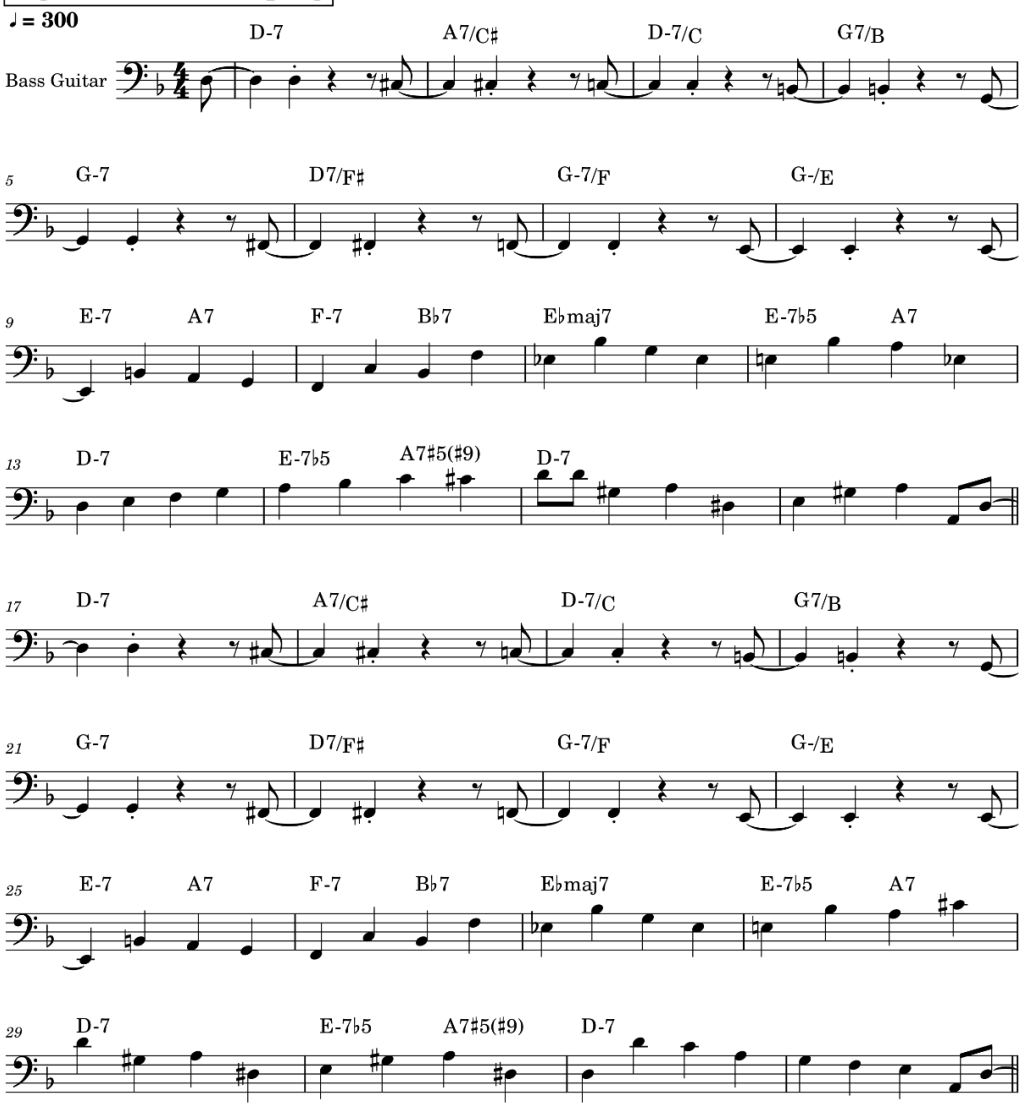
Appendix K: “Got A Match?” Walking Bass Transcription

# Got A Match?

John Patitucci: Walking Bass

Chick Corea Elektric Band

**Figure 1: Lead Comping**




1986 GRP (GRD-9535)

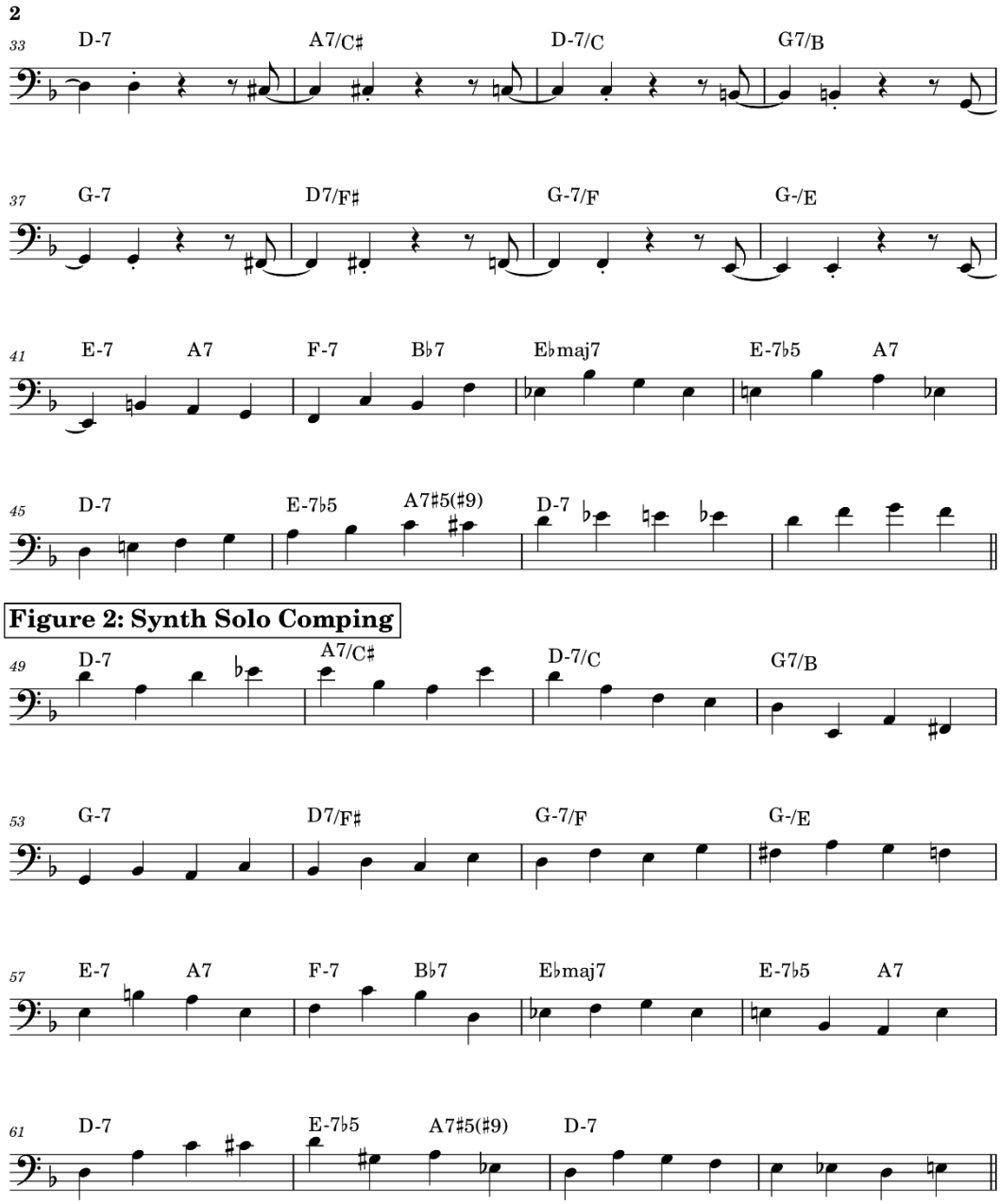
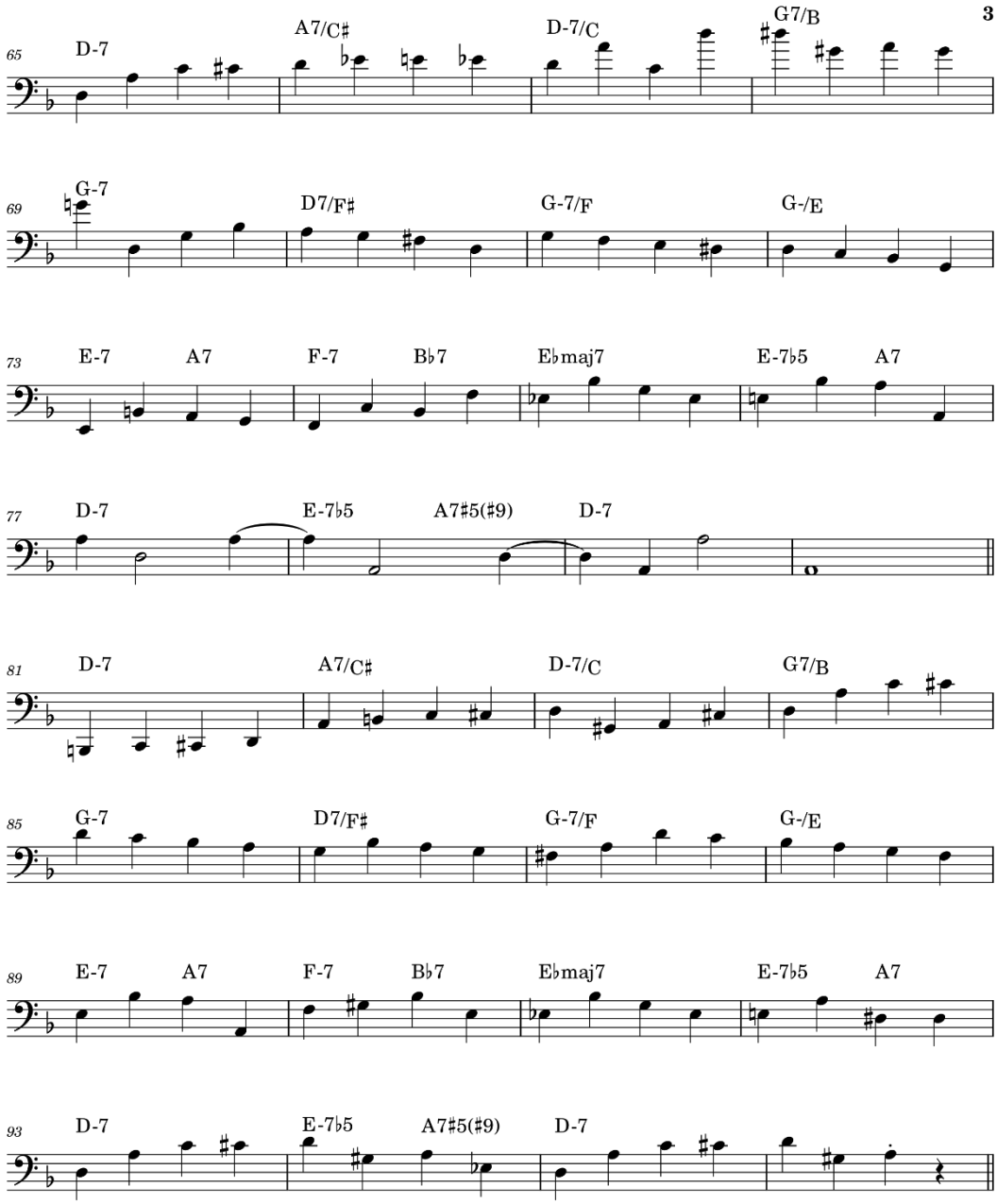



**Figure 2: Synth Solo Comping**

1986 GRP (GRD-9535)




1986 GRP (GRD-9535)

**Figure 3: Second Synth Solo**

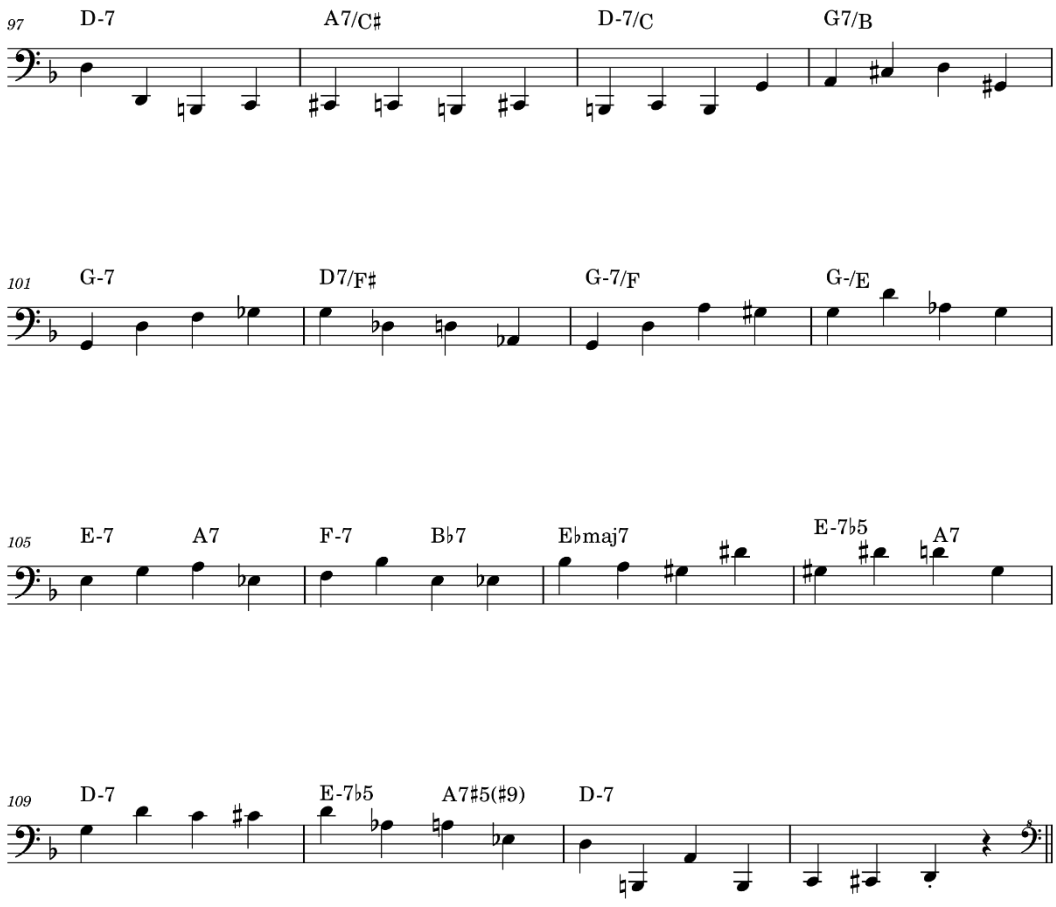
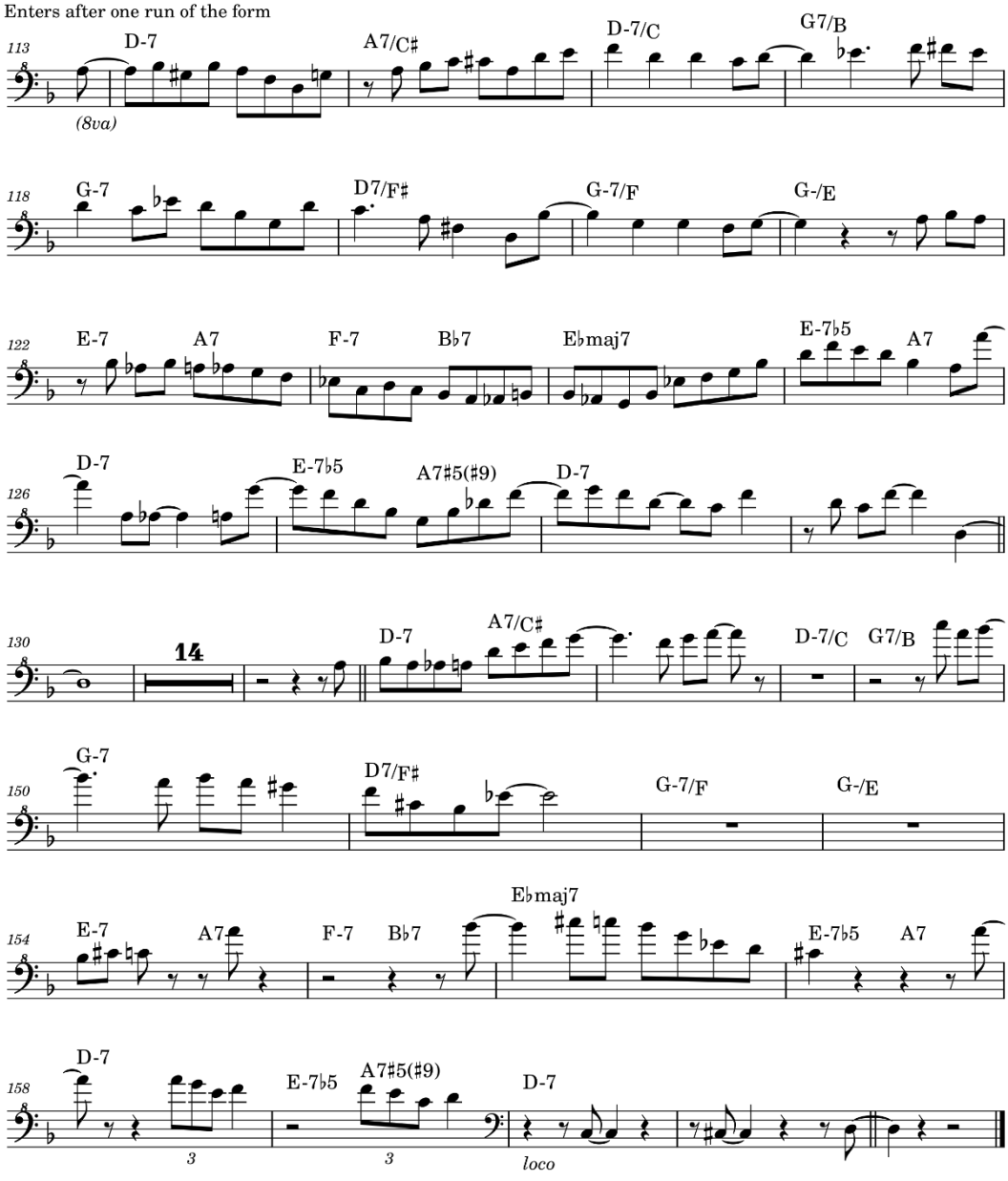


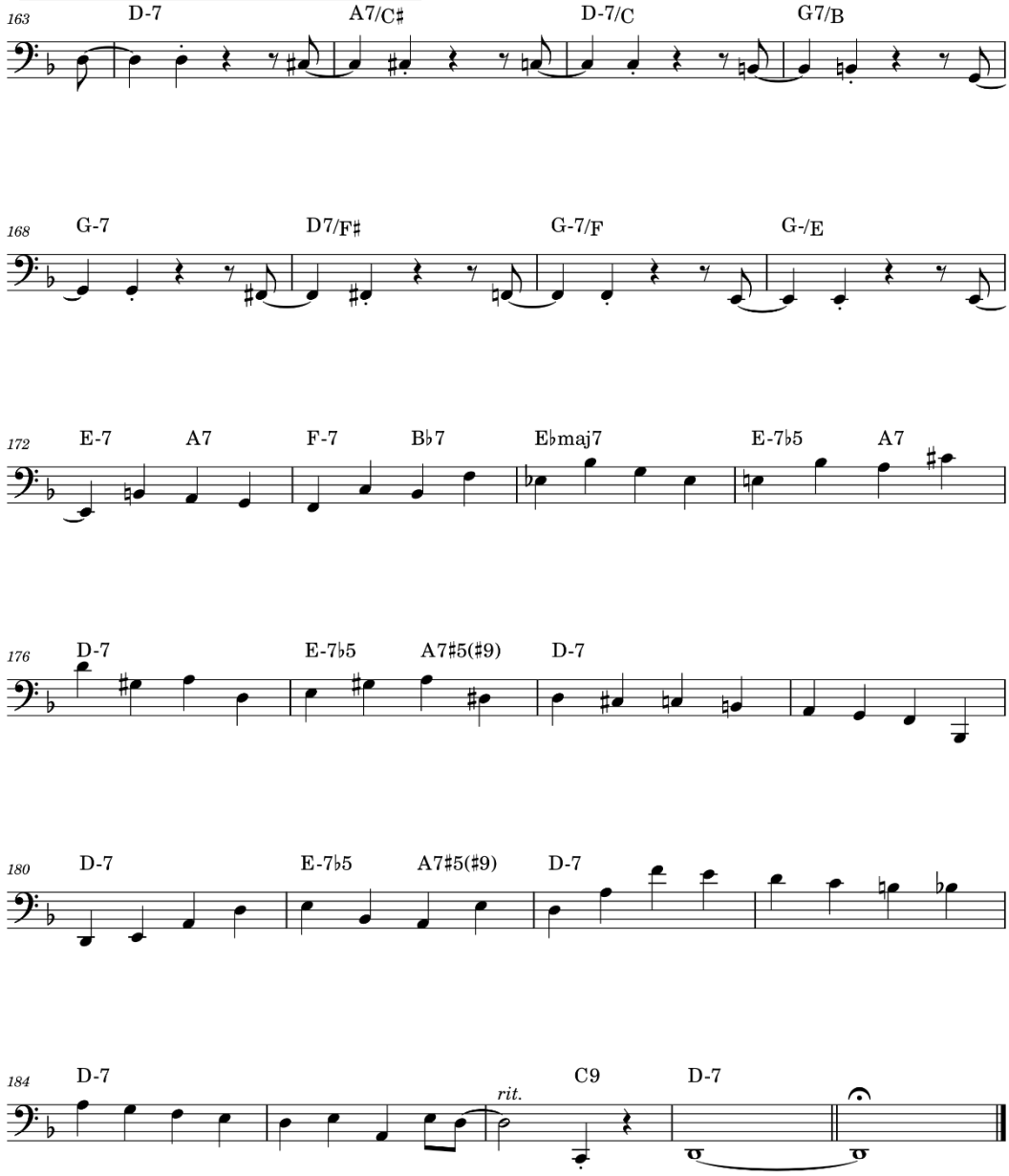
**Figure 4: Drum Solo Motifs**

Enters after one run of the form



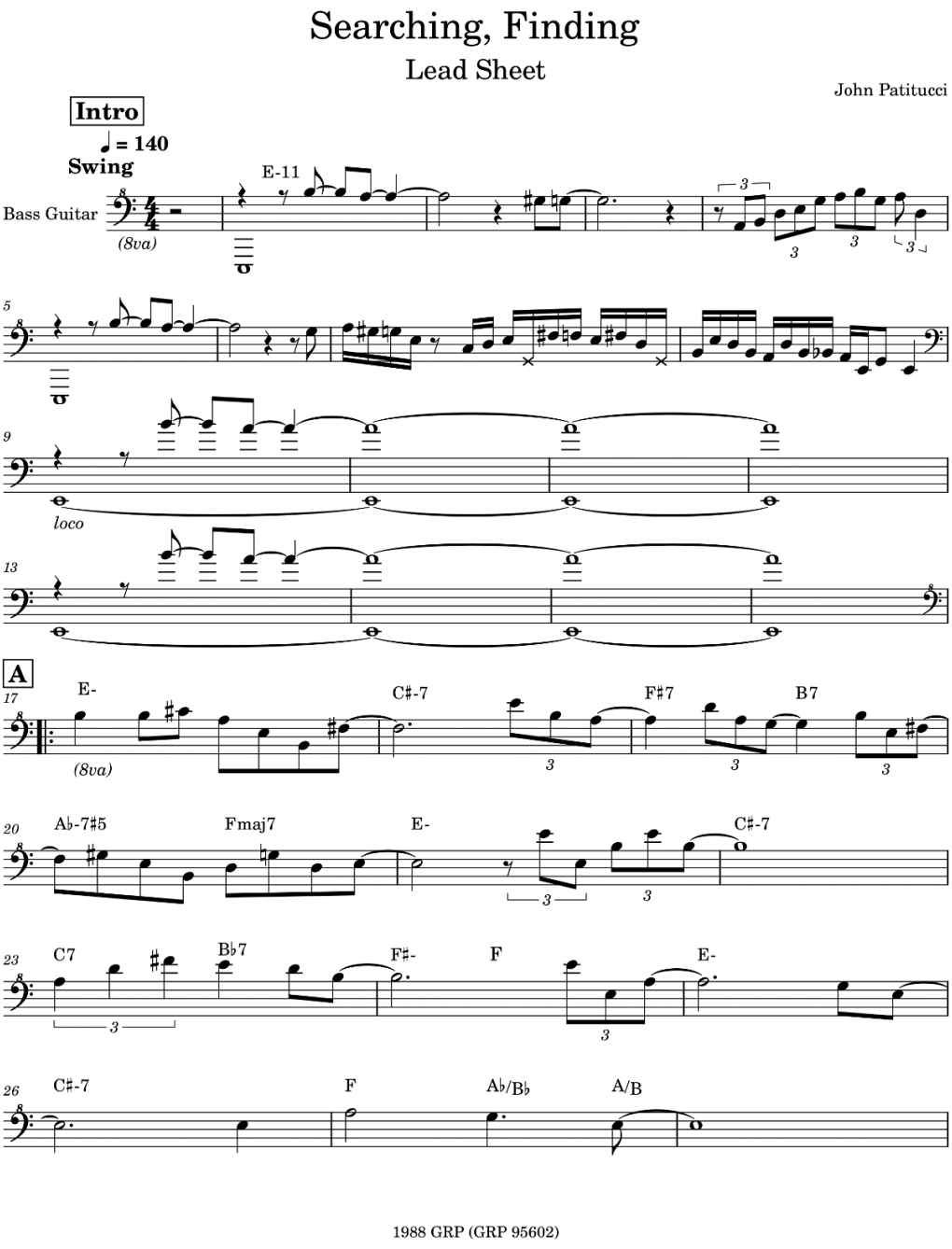

1986 GRP (GRD-9535)

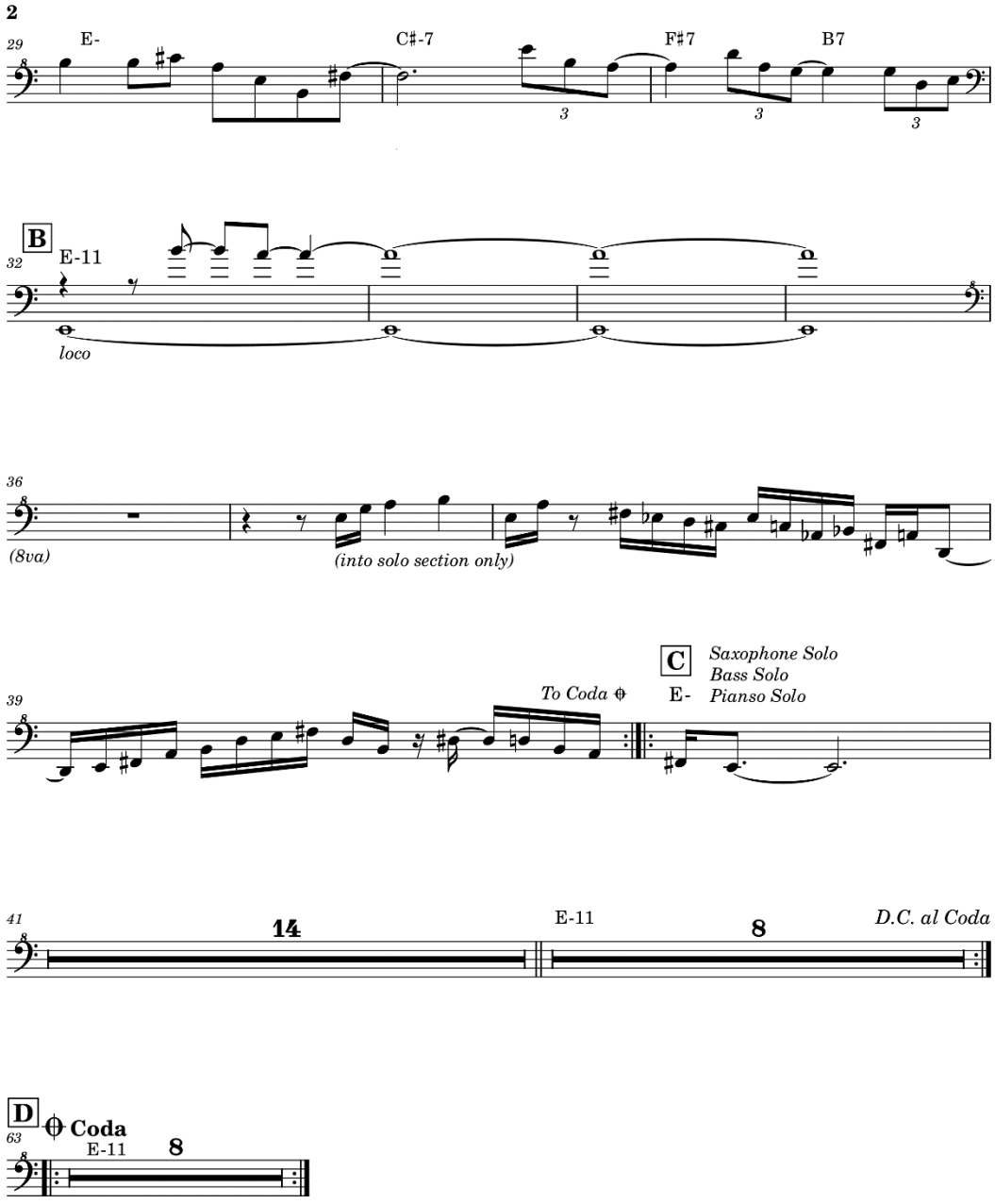
**Figure 5: Final Lead Comping**




1986 GRP (GRD-9535)

Appendix L: “Searching, Finding” Lead Sheet Transcription





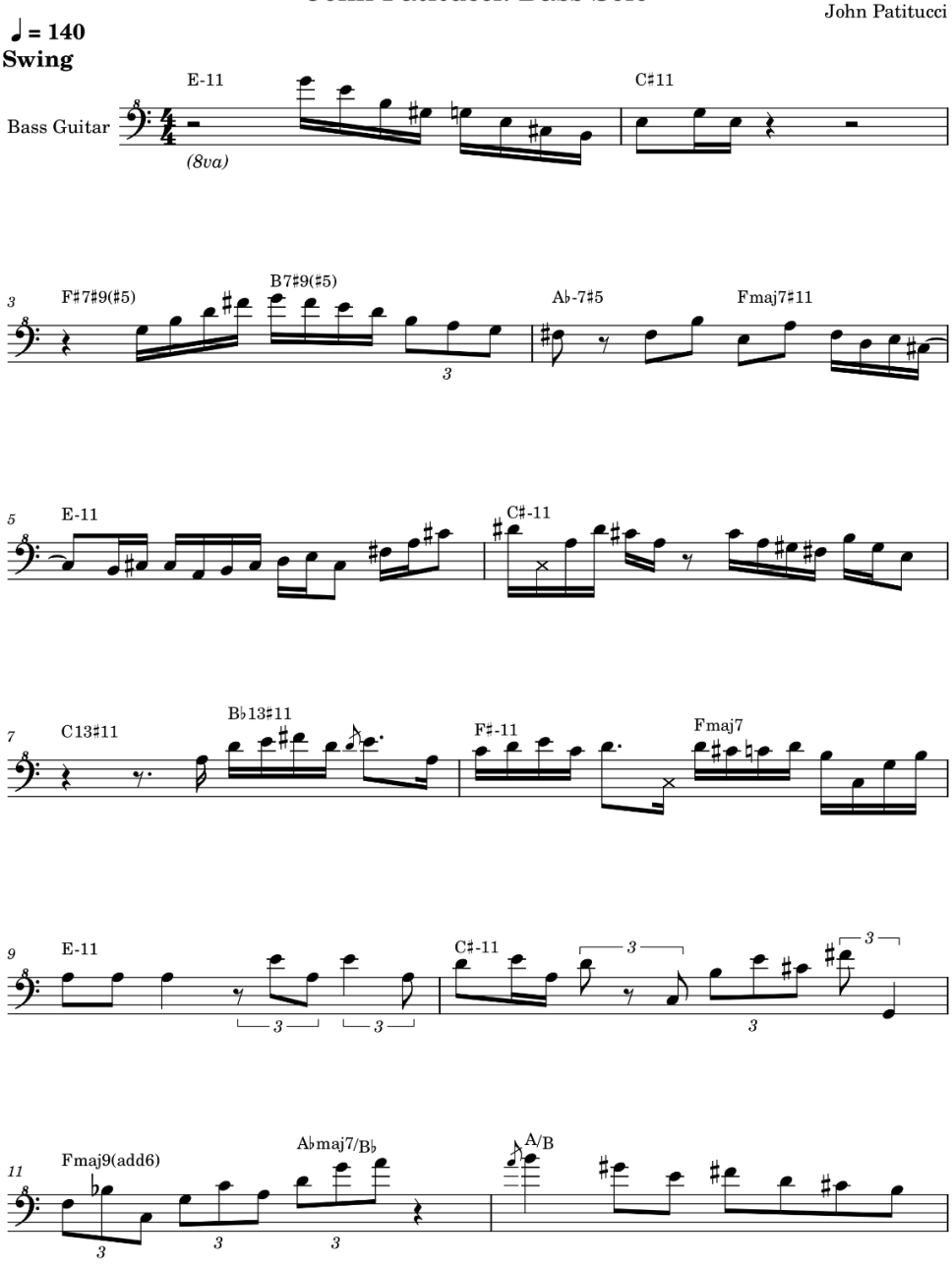

1988 GRP (GRP 95602)

Appendix M: “Searching, Finding” Bass Solo Transcription

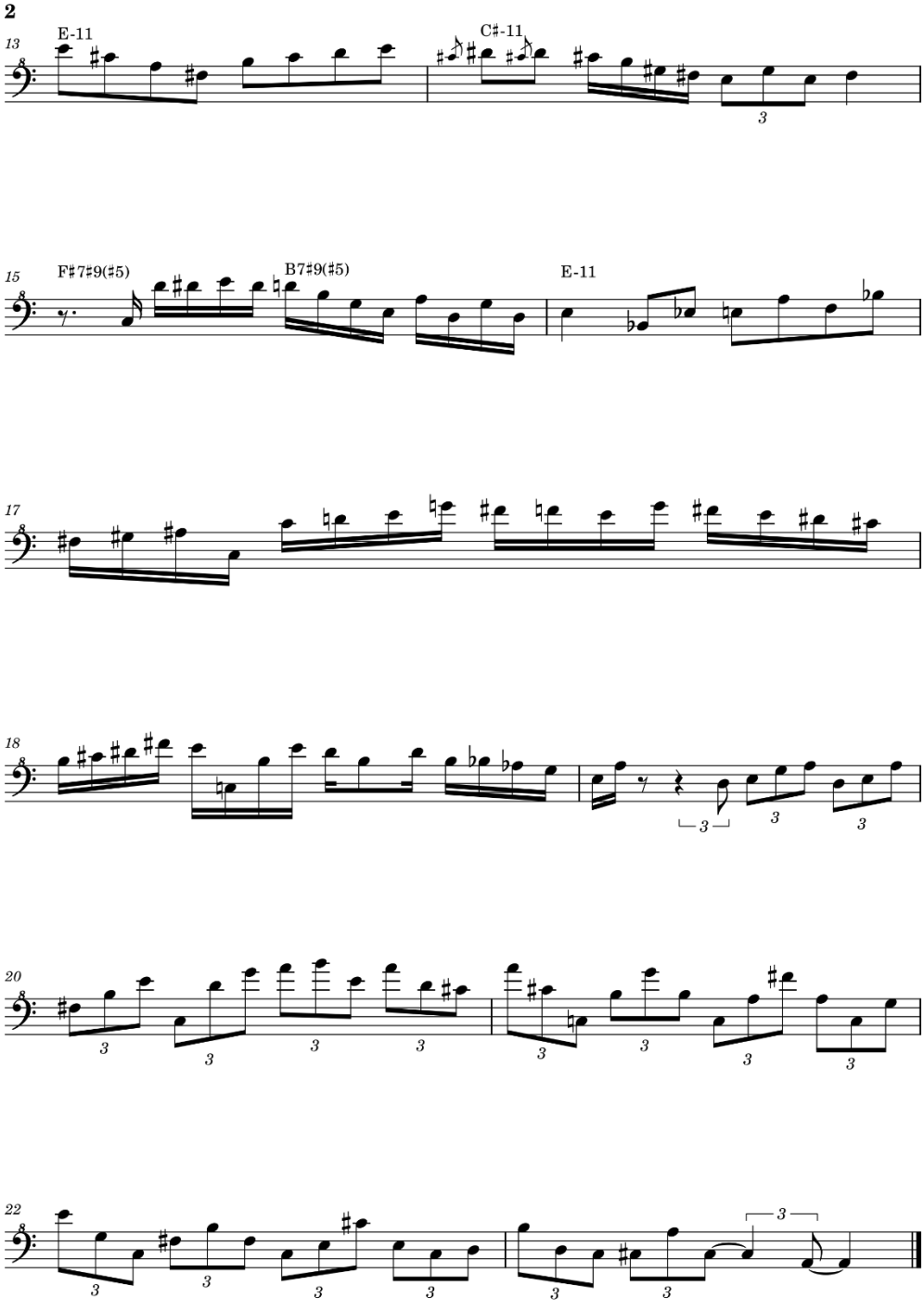
# Searching, Finding

## John Patitucci: Bass Solo

John Patitucci




1988 GRP (GRP 95602)




1988 GRP (GRP 95602)

Appendix N: “Searching, Finding” Walking Bass Transcription

# Searching, Finding

Dave Witham: Synthesizer Bass

John Patitucci: Electric Bass

John Patitucci

**Figure 1: Intro (Witham)**

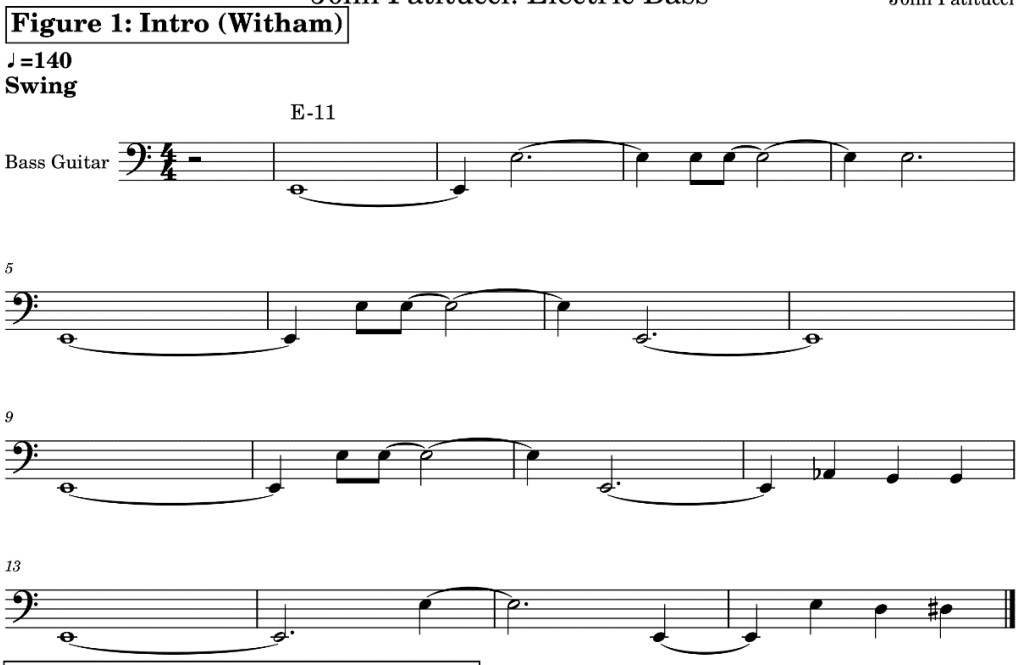



**Figure 2: First A Section (Witham)**

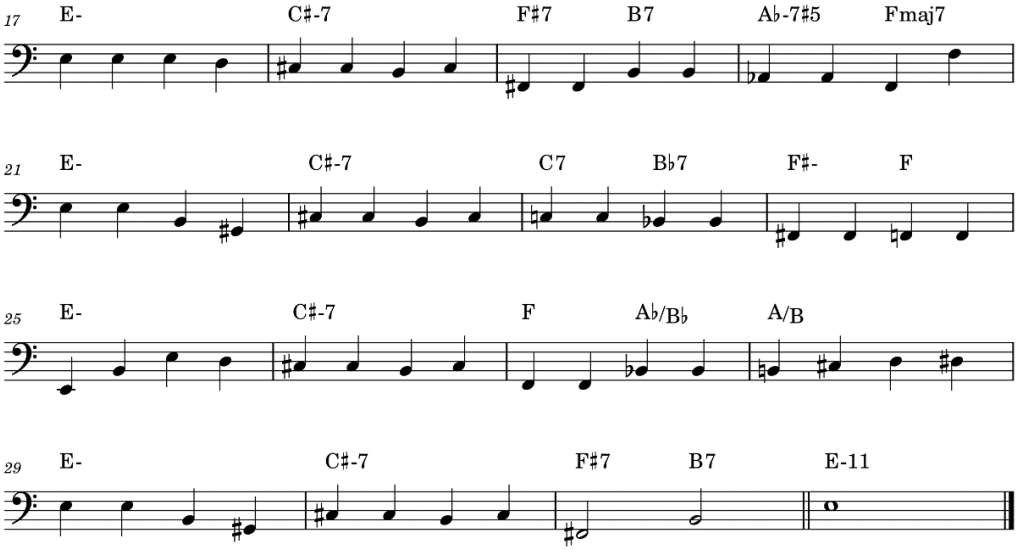


**Figure 3: Second A Section (Witham)**

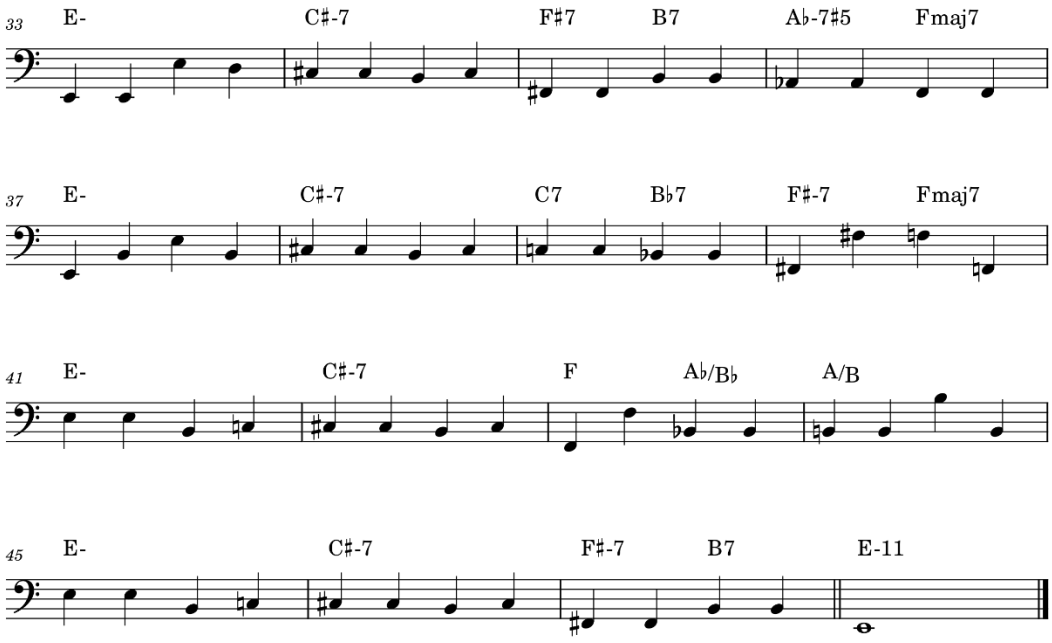



**Figure 4: Sax Solo (Patitucci)**

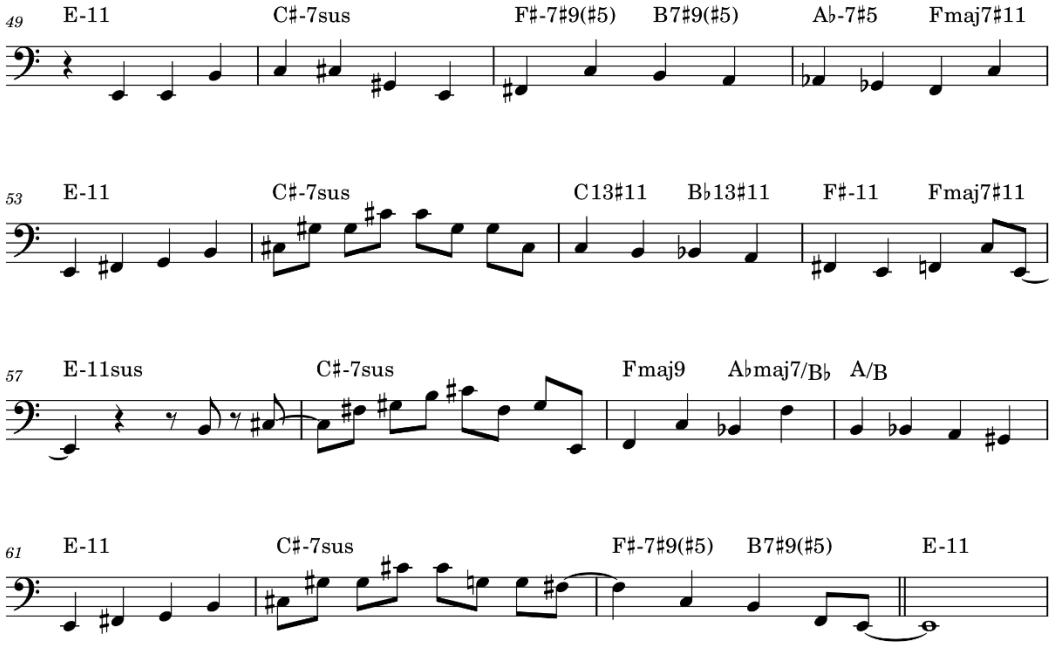


**Figure 5: Piano Solo (Patitucci)**

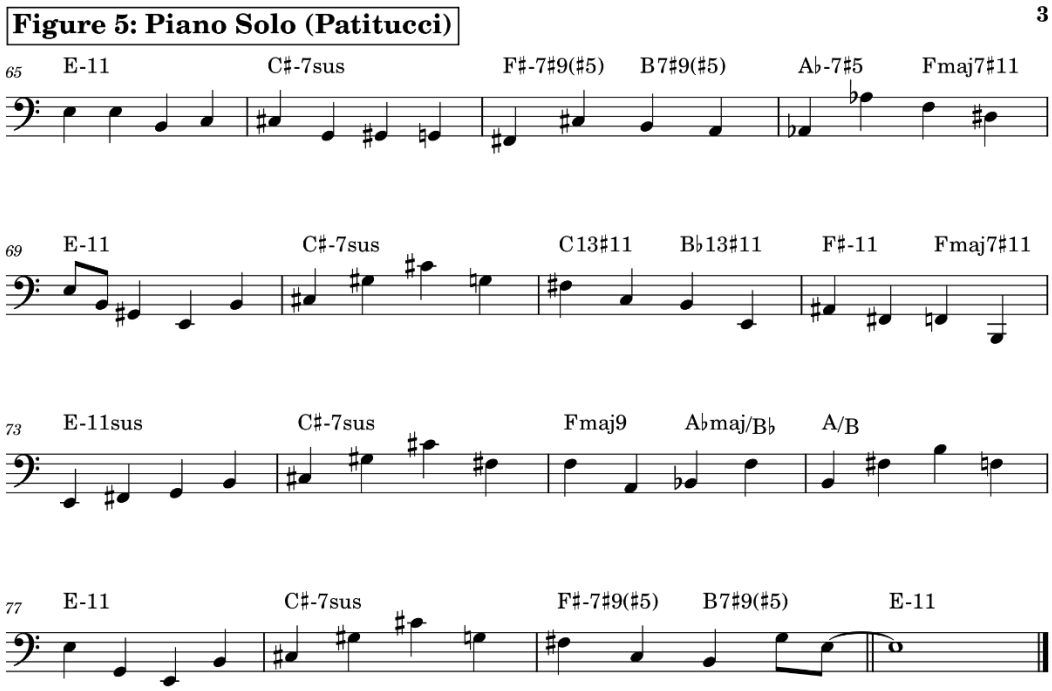
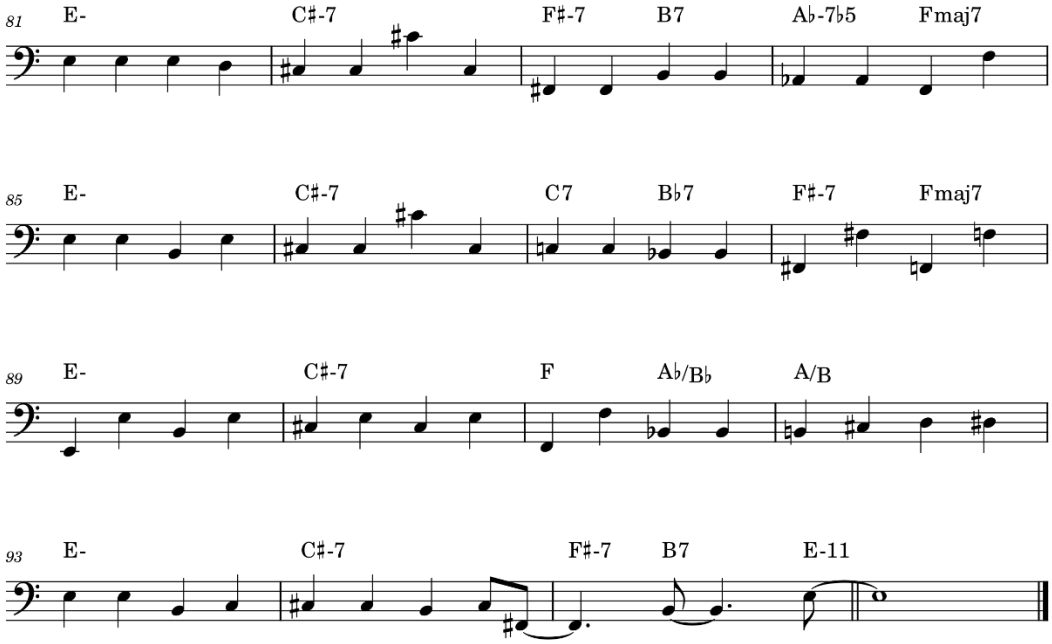



**Figure 6: Last A Section (Witham)**




1988 GRP (GRP 95602)

## Appendix O: Anthony Jackson Interview

Anthony Jackson was unavailable at the time to respond directly to questions. The following questions and responses are relayed from various sources to provide insight to his creative process when developing and designing the various stages of his contrabass guitar. The first source comes from a webinar which was hosted by Berklee School of Music on August 27, 2020, titled "One-Two Many Strings: The Extended Range Bass," of which Mr. Jackson was a guest member of the panel which featured numerous other extended-range bass players.

*(Steve Bailey): So, Anthony, if you don't mind, just start talking about your history a little bit before the first six string and what led to it, and anything you want to add!*

Well, I came to jazz—playing jazz—around 1968 or 1967. I remember I got my first copy of *Downbeat* magazine in 1968 because Paul Chambers, upright player, he had just died. So, I looked it up the other day and I see that he died in '68 (*Paul Chambers died in 1969*), so that was when I really began committing to a jazz idiom and I remember it would have been around 1969 that I first began thinking about adding an extra two strings. It was always two strings that I wanted. The main reason was wanting a low string, but the high C was important because the guitar had six strings and there was a real need, I felt, in being able to go up without having and 8vb specified in the music to go down an octave while the strings continue to go up. And it was around 1969 that it first occurred to me to really think about it. I used to practice to Jimmy Smith records

because he played the Hammond B3 and there was nothing but walking bass on his albums. And I used to just practice along, I turned the bass down on the record player and play along, and one time, I could swear, he dropped below low E. I'm not certain now whether that was true, I remember thinking later on, "Did he really do that? Did he really go down below the E?" But maybe he didn't, but it certainly did sound like it. And it was an amazing experience to hear that. I'm still talking about it today, so that made a lot of sense, and at the same time, I thought of the high C. It was a time when I was just beginning to play along with other things on records besides the bass part. I'd play a string part, play a viola, cello, trombone, tuba. And I remember being intrigued by hearing string sections, octets, string orchestras, and it occurred to me I'd like to be able to tell the arranger, "Listen, put me in with that." And the first few times I said that, I didn't get any response. It just wasn't addressed, nobody cared, but I kept that in mind.

Around 1972, I was starting to get a little busy, and I began to think that "Well, you know? I'd like to get someone to build one of these instruments for me!" I didn't know of any builders. I knew of Alembic, but they were in California. And I just thought about it, I carried the idea around with me and I met Ken Smith around that time and he was working with a guy named Carl Thompson. And he said, "Carl is the guy!" This was before Ken was building instruments, of course. I didn't know that he was planning to build anything. And one day, around 1972, '73, I called Carl Thompson, got his number from someplace, and I asked him if he'd be interested in building me a six-string instrument. It didn't go very well, the first meeting. "You want what?! A high C and low B? Why do you want? I don't understand." And I said "Well, I just want the range. I want to have additional range low, and high." (as Carl) "Why? I don't understand why you'd

want that?" And I left and I came back later, a few days later, and I told him I wanted this and I really wanted him to do this for me. I didn't know of anybody else. We back-and-forth-ed a little bit and he finally agreed to build one, but it was difficult because I had the instrument figured out, what I wanted, I wanted Fender spacing. It was the one thing I mentioned to him because I assumed it was natural. You aren't just going to take six strings and cram them into the space of a four string. You've got to widen it out so that it had standard spacing. He didn't do that. So we agreed to have him build the instrument and when he delivered it to me, it was standard spacing with six strings. And I remember thinking, man I'll never forget it, I remember thinking, "No! I didn't tell him. I should have told him. I figured he'd do it!" This is now 1974, and he built the instrument. And I took it on a tour with Roberta Flack, this was my first Japanese tour, and I had my Fender and the six-string. And I could use it just a few times and I couldn't get used to the spacing. So, I immediately—now I find out that Ken Smith is building instruments.

Ken built the second instrument and its very elaborate, very ornate, beautifully built. The string spacing was a little wider, but Ken tried to talk me out of the wide spacing. I didn't discuss it at all with Carl, but with Ken, I told him the problem with Carl's instrument. And he said, "Listen. I guarantee you. Let me build you a six string with slightly narrow spacing than you ask for. The spacing you want is really too wide." I tried to explain to him that I really wanted it. I'd been thinking about this for a few years, and I want it wider. (as Ken) "Well, let me guarantee you that you'll prefer it the way I do it. So, it's a little bit narrower, but it's not as wide as you like." To make a long story short, he built it and it was still too narrow. Better than Carl's, but still too narrow. And I immediately said "You've got to build another one." Now, this price is starting to go

pretty high now. I think Carl charged me 2,000 dollars in 1974. I think he was getting like 900 dollars for his standard four strings. Ken charged me 6,000 dollars a year and a half later for a six string, and he built another one. That was another 6,000 dollars. The second Ken Smith, and the third instrument overall, did have the correct spacing. Finally! That's around 1979, and it really picks up from there. Because then I could use it, I could record with it, I did a fair number of sessions with it. And then it was a matter of I just wanted to perfect it. I wanted to look for more things—we don't have to go in to all the interesting things that made it up – but it was on its way by '79.

*(Chris Jisi): Anthony, did you have a second—or maybe it was the initial—model that was a forty-four-inch scale? You had it stashed in your closet?*

Yeah, it was destroyed. I haven't thought about that in thirty years! Because I had stored it in a closet with some shortwave radio equipment. And I came home from a tour and opened the door, and everything in the closet had collapsed! Radios on shelves had come down, and one of them landed on the instrument and broke it. I saved it for a time, but somebody came along and threw it out. If I had known that it would be worth something mechanically, or something of a novelty, I would have kept it. But that was a forty-four-inch scale. I think it was (a Thompson). And Carl had told me that that was a long upright scale, most of them were forty-one inch or forty-two-inch, this was the longest scale – and I just wanted to see how it worked, but I could not play it at all. It was just impossible to play. I would have needed different technique to get something out of it. I just kept it because it might have been of interest someday but, somebody dropped it,

somebody broke it, and it was gone. That was in 1975. The first six string was 1974. I remember that instrument, if you look, the serial number is 474. That was April ’74!

## Appendix P: Jimmy Johnson Interview

Jimmy Johnson was kind enough to reply to the following set of questions via email on November 13, 2020, and provided his accounts of the instrument's creation, thoughts on technique, and thoughts regarding the instrument. The following responses to the questions below are his direct, typed replies to each question. No additional edits have been made.

*When it comes to the five-string bass guitar, what do you see as the benefits of the instrument?*

For me the benefit is simply the five extra low notes. My goal was never to facilitate easier fingering options.

*What was the deciding factor for your initial pursuit of the extended lower register?*

My father played for forty years in the bass section of the Minnesota Orchestra (now called the Minneapolis Symphony Orchestra). The instrument he played in the mid-70s had a keyed low C extension or "machine". Since that low C is an octave below the cello's open C there is quite a bit of orchestral music where these extended contra-bass notes are written in as an option, or the section splits and plays in octaves.

My father was also a piano tuner and technician so very handy in his workshop. We began to wonder if a "machine" type of extension could be fitted onto an electric bass, and I think we even tried to calculate how long the E-string would need to be. But

not only would a keyed machine likely have caused too much physical noise (which would be heard through the pickups and amplified) we found it unlikely that we could find a long enough electric bass E-string.

Then he told me that some orchestral bass players in Europe were switching their instruments to five-strings. Apparently, there is some music by Mahler which has that written low B. At that same moment bass guitar strings were starting to be offered in various gauges. That led us to the logical conclusion that a five-string electric would be the thing to try.

*When making the adjustments to that first Alembic, were there any design aspects that were particularly difficult to perfect or overcome?*

Fender made five-string and six-string basses in the early 60's. The six-string was essentially a guitar with a thirty-inch string length and tuned an octave lower. Their five-string was even funnier as it came with a high C string but a shorter fretboard so E-flat was still the highest note available, the same as on their Precision Bass. I think their idea was to make it an easier instrument to read music on while keeping your hand in one position. No extended-range in either direction and frankly, a pretty weird concept in my opinion. But I don't think they made or sold very many.

Alembic, being a custom shop, had already made various crazy instruments by the mid-70's including (I believe) some five and six-string basses. But again, with high C or guitar tuning. We got the biggest low E string that GHS made at that time (.120) and sent that along with a medium gauge set of GHS Boomers to Alembic and asked them to do their thing. I made no specific request regarding string spacing and I think they

essentially made that first Series-I five-string bass on a four-string neck. It's much tighter spacing than what was "normal" at that time, but it worked fine for me and is still my preference.

*Were there any particular methods or techniques that helped you adjust to the register difference?*

Not really. It only took a minute to teach my brain that the bottom string was no longer an E. I found that resting my right-hand thumb between the B and E-strings not only kept me thinking straight but also allowed me to keep all the strings quiet. Thumb there, index on A, middle-finger on D, ring-finger on G. I just had to learn to shift my thumb when necessary. It's harder for me to adjust to a four-string if I'm asked to play one now.

*What was the general reaction to the first introduction of the instrument?*

It may surprise you to learn that I encountered some resistance from audio engineers who were not used to hearing pitches below the standard low E. They seemed unsure if it would correctly translate to vinyl... Most likely my first uses were for the last note of a song in D.

*How soon after the first Alembic five-string did the fretless version come into fruition and what, in your opinion, are the contrasting benefits of fretted/non?*

That first fretted five-string was delivered in 1976 and my first fretless bass was delivered in 1980. Jaco Pastorius was happening by then and he had a profound effect on

all of us. I can't really describe to you the 'contrasting benefits' as I think of them as completely different instruments.

*Who do you currently see as the up-and-coming extended-range bassists? And what advice would you have for those new to the instrument?*

There are SO many amazing bassists, all with their own individual voices. I don't consider the instruments they play – nor the range they play it in – to be important factors in the music they make. Many great bass parts only require one or two strings!

My advice for somebody just getting a bass with a low B is ... use it sparingly! Don't just play the lowest note available at every opportunity. Play musically!

*Where do you see the extended-range bass's future? Or what do you hope to see?*

I understand Abe Laboriel has a bass with a low F-sharp string which really makes me laugh. The fundamental for that note would be 23.12 cycles-per-second. I know drummers who can play faster than that. So, let's call him the winner in that direction. In the other direction I prefer guitar players.

*Were you aware of anyone else's efforts to utilize extended-range basses at the time of your own range exploration?*

I will always give the nod to Anthony Jackson for being the first to go low (and high) with his six-string "contrabass guitar". I don't recall the first time I heard him use it on a recording, but I've always been a big fan of his amazing sound and beautiful playing.

*Can you recall any of the challenges of recording some of the early Flim & the BB's material direct-to-disc or direct-to-digital?*

Flim & the BBs was just a recording session rhythm section who worked together often in and around Minneapolis. 3M (Minnesota Mining and Manufacturing) designed a digital two-track audio recorder and they called us in to play music into it to see how it worked. We were beta testers! We tried to do things musically which would show off the new format's wide dynamics and super-clean sound. That's what steered the band's compositions. Our biggest challenge when we first got going was it was live to two-track with no chance for any post-production editing or fixing. Soon Mitsubishi found a way to make razorblade editing work on their digital tape recorders and we took advantage of that.

## Appendix Q: John Patitucci Interview

John Patitucci graciously offered an hour of his time to take questions over a Zoom video call on the morning of November 17, 2020. The transcription of the conversation contains light edits to ease the flow of reading the responses. The topics discussed contain his responses and recollection of events as he recalls them.

*When it comes to the six-string bass guitar, what do you see as the benefits of the instrument?*

Well, I can tell you what happened with me, which was very interesting. I had heard Anthony, he was the Galileo pioneer, he invented the whole thing, got people to make them, they thought he was crazy, but he knew something that they didn't know. So, when I heard him, I thought, "Wow! This is amazing!" and at first it was overwhelming thinking about it, and it wasn't really like I had to go right out and buy one because I knew I couldn't afford it at the time actually, but I did really dig it a lot. I thought, "That would be interesting. It has an interesting sound." Then what happened was around 1985 I got the gig with Chick and the Electric Band. I was the first one hired, actually. I got that gig and then we started in the Spring playing some stuff, we did some gigs, played the Queen Marie Jazz Festival opposite Miles Davis and some big gigs, and we were just a trio, Electric Band started off as just a trio. So, it's acoustic and electric stuff, playing all this incredible music he was writing, he had all these synths, and I was thinking "man,

I really need" – 'cause that was in the 80s when the keyboard players were taking over the world, they were playing lower notes than us.

So immediately I thought about Anthony and the low B was like "wow, I kind of need that now in this band." And then the music started evolving and he wrote all these things, and I was – because there was just the three of us I was soloing a lot 'cause he would – unfortunately 'cause I would always have to go after him which was horrific for me. But it made me stronger, but it was humiliating too ha. Just his comping was so powerful, I always felt like I was getting blown out the door. His comping was way more interesting than anything I was coming up with in my improvising. We started playing and then I realized that higher register would be cool too because there was some melodies like "Got A Match?" became this thing that I doubled with him and all these things. During that Spring period, it became clear to me that that would be great if I could get one of those six-strings like Anthony had, which at the time they had Ken Smith's name on them, but they were really being made by Vinny Fodera. I didn't even know that until after I had had the bass for a little while.

So, then we started rehearsing in the Fall for our first major tour. In between that, we played gigs in the Spring with Chick in this new trio, Electric Band, then Chick went off in the summer and played with Miroslav Vitous and Roy Haynes, they did a reunion of the trio that plays on "Now He Sings, Now He Sobs." So, I was off for the Summer, and I got a gig with David Sanborn, so I was playing Funk all summer, all Marcus Miller's music, and I had a Jazz Bass, a '64 jazz, and I was slappin' away. It was fun! But it did bring me to New York, and I went to Ken Smith's shop in New York City and tried one. One of those Smith/Jackson six-strings he built. And I went "Okay, this is it! This

would be amazing for that band! I don't know how I'm going to learn it, but..." – and in truth, I was wondering how I was going to pay for it, frankly. Chick Corea helped me pay for it. Chick Corea actually in the Fall he said "Look, I'll pay for the bass and I'll take it out of your check every week and you'll have paid me off after" – you know, 'cause we played a lot of gigs. So, we start touring and the bass was paid off – that bass was expensive for that time!

*Can you recall the price at all?*

At least three grand. I thought it was five, Ken said "no, it was three" Whatever it was it was more money than I had. I had been doing a lot of session work. Things were really popping for me in L.A. I had moved up to L.A. in 1982, now it was 1985, and I was getting to do a lot of stuff, but I was working a lot but still not making an incredible amount of dough. That money for me was – wow three grand for a bass? When I grew up there used to be Fender basses in the newspaper for 250 dollars. So that was kind of a culture shock/sticker shock of the new era. Little did I know, later on, nowadays, people spend twenty grand on a Fodera. It was really driven by the music. I knew that-music in that band, that bass would open up some playing field for me in both directions in my bass playing role, in my foundational, bottom-of-the-band lay-it-down, huge, thick, low notes, and for blowing 'cause I was in to playing more like a tenor saxophone, and I could get more range to peek out over the top of the band 'cause there was these stick synths and Dave (Weckl) had this heavy, amplified kit thing which was incredible and huge sounding. I had to have something that would not just get blown off the stage. Two madmen on either side of me (*laughs).*

*Were there any particular methods or techniques that helped you adjust to the register difference?*

It was baptism by fire. Like, I got the bass, the bass wasn't delivered to me until the rehearsals for the full tour in 1985. Waited a couple of weeks, then -boom!- we were out. I was in my hotel room, basically I started really doing this thing that I've always tried to tell my students to do, doesn't matter if you have a four-string, five-string, or six-string, you should do it; Don't just practice your scales and sounds from the roots, practice things from the lowest note on the instrument to the highest note. So, if you're involved in any particular harmonic sound, you'll know your way around by ear, and you'll have good fingerings for that sound. Even if it's C-sharp minor seven flat five, if you start from the low B and you go all the way up that sound – I have everything memorized, I don't really like theory to get in the way of music, so I memorize. So, if it's a C-sharp half diminished I either play E-melodic minor or I play D-major. – Whatever it is, I'm going to start on the low B. I'll go B, C-sharp, D and go all the way up the D scale, or B, C-sharp, D-sharp, E and then go up the melodic minor. And I practiced it going on the lower two strings and jumping up, or going across and going up, or going middle and going up. All different ways. The problem, I think, with a lot of people now is because so many things are on YouTube and all this crazy stuff it's very difficult – unless you have a teacher to have sort of a systematic way – I mean the instrument is so young, it was invented in '51, the electric bass, I was born in '59 so I've been playing the electric bass for fifty years and I'm going to be sixty-one next month, so it'll be fifty-one years, I started when I was ten on the electric bass. So, I've seen it change a lot in my lifetime and the guys that are a little bit older than me, they've seen even more radical changes.

Somebody like Chuck Rainey or somebody like even the older guys that aren't here anymore, Monk Montgomery or guys that originally played it in jazz groups where the band leader didn't want to deal with the acoustic bass and the travelling anymore. James Jamerson, too.

So anyway, that's how I got into the six-string bass. It was really, ultimately, the music dictated that I checked it out. It wasn't just 'I want to be cool', it wasn't just that, it was the sound, I mean, Anthony's playing was just so amazing. I knew I couldn't play like him; nobody can play like that. People try, and they steal a lot of things, we all do, but I knew I would have to find a different way to think about it and I knew because of the bebop stuff and all the things I like, I could go a different direction.

*It's crazy to think about the timeline; Jackson got his and worked with Carl Thompson for a bit and then did a few models with him and then moved over to Smith and then not too shortly thereafter, there you are in New York grabbing one out of the shop.*

Yeah, and I had to wait for it by the way. I ordered it in the summer, and I didn't get it until the fall.

*The turnaround wasn't very fast on those at all because they were all handmade and built to suit and all that.*

And basically, I just said "Give me the one that Anthony helped build." He (Ken Smith) was really not into letting anybody help him with the design. He listened to Anthony and really it was Fodera that built them.

*How do you juxtapose your approach when alternating between upright, four-string electric, and extended-range basses?*

A lot of gigs over the years, that's part of how I built my career. They like the versatility of having somebody who played both instruments. As a studio musician, I still record a lot and I've been recording this week, I'm putting tracks down for a producer, but they're all on upright, sometimes it's only electric. People send stuff, I put it down. I did something for Chick and the Electric Band. We were passing something around, right now that's going to be released, it's a brand-new tune. Juggling between the two has always been a little intense. I always joke about it, it's a long way from this on the electric bass to playing with a bow on the acoustic bass. When I was coming up, I went to college in California. We had moved out there in the early 70s and by the time I went to high school there as well, eighth grade through college in the Bay Area, so we went from New York which is an amazing cultural scene to the San Francisco Bay Area which in the 70s was off the chain. It was Larry Graham, Tower of Power, Santana, Herbie was making those records with the Head Hunters in San Francisco.

All this music, all the gospel stuff, Hawkins Family, everything was happening, it was amazing! I used to go hear incredible jazz in the city with my brother would drive us in and we would go to the Great American Music Hall and The Reunion, or the Keystone Korner, and there were all these clubs, and I heard all the greatest jazz musicians in the world, they were touring. The electric stuff was killing, all that East Bay Funk, and Rocco Prestia and also Paul Jackson with Herbie and different players, Bobby Vega with the pick playing on Sly & the Family Stone stuff after Larry. All these different things made up my influences and then I met a guy named Chris Taylor who pushed me to read

music, ‘cause when I met him, I was about thirteen and I didn’t read music at all. I had been playing for a few years only by ear. He forced me to learn how to read music and thank God he did because I wouldn’t have been able to be a studio musician really and play with Chick the way I did for all these years, and many other people; Wayne Shorter, Herbie, all these people that write music. So that shaped me, and because I started on this, I never left that, like in terms of – I didn’t pick up the acoustic and throw it away, in fact I went three years of college, and I was a classical double bass major in those years. I went to a state college, my parents couldn’t afford anything fancy, but they had great classical teachers, both of these places; San Francisco State for one year and two years in Long Beach State down in L.A. area.

Studying classical music and playing in the orchestra, playing in the jazz band and playing tons of gigs those three years of college. I was playing everything from Mexican cumbia gigs to bebop gigs to fusion gigs to recording Vietnamese-Pop sessions for like ten bucks. All kinds of crazy stuff, played with an Elvis impersonator, I did everything that you could possibly do that I could get called for and then I started to do more. I started doing sessions, I did my first recording session, I did a demo session for a dude when I was in my teens in the Bay Area, this funky little thing. It kept rolling and then when I moved up to L.A. in 1982 after I left college because they were trying to get me to quit playing all this other music and just only focus on orchestral playing and go for auditions and I just said, “I’m out.” Went on the road playing electric. But I never stopped both and so I was always juggling, my quest was to be – when I was really young and naive, I had this idea that I was going to be the greatest at everything. I’m going to do every style on both basses, and it’s a little insane, there’s no greatest – there’s only many

strong players, great players with different personalities that make up comparatively the small batch of people that wind up doing a lot of the work. Relative to the millions of people in the world. I had no idea that would ever happen. I'm just a kid from Brooklyn, you know. I didn't come from – my family didn't have connections or money or any of that kind of stuff to slot me and move me. This was a miracle, what happened with me.

My brother was the first musician in the family, he helped me start. He's a great guitar player and pastor and he's an amazing guy and he really helped me a lot. And Chris Taylor came into my life just at the right time. I was thirteen and we moved to L.A. just at the right time when, I guess, I was about eighteen. Then I moved up to town, I was twenty-two, really young, and I was starting to do gospel sessions because I knew Abraham Laboriel and we went to church together and I would start getting recommended for things and gospel recording things, gospel pop and different things. And I was always playing bebop gigs, I always wanted to play with these heavy people in L.A. 'cause at that time, all these guys that you would associate with the greatest period in New York in the 50s and 60s, they were all living in L.A. and then we had Chick, Herbie, Wayne, Freddie Hubbard, Hubert Laws, a lot of people, and I've played with all of them. And all these Brazilian guys started calling me, so I started learning a lot about ethnic music, too, in L.A. 'Cause that was in my heart, first time I heard Airto Moreira, the famous percussionist, and later I played with him as well, I was in that band, because Joe Farrell, the saxophone player with Chick, who I was trying to get in to – "I want to audition with Chick!" and he goes "He doesn't really do that". And so anyway, I had all these experiences and all of them wound up with me playing one of the other bass, or both on gigs. So it started to become more of a normal thing that I did both in the studios,

I became known for both and that helped a lot.

*So, it's mostly more of a mindset thing, like, you just put yourself in one gear or the other?*

Yeah, and they both inform each other. The big bass helps me swing better on the electric. When I first came up, I was listening to all these jazz records too, Ron Carter and Ray Brown and all these different bass players, but at first all I had was an electric bass, for many years. I didn't even get my own acoustic bass until I was eighteen. So, I was playing on school instruments the first year of college, even. In high school I started really sort of playing it when I was about fifteen. There was one in the band room finally and I started fooling around and then I auditioned for college on a borrowed bass! I had to borrow a bass to play a little Vivaldi sonata so I could get in and study with this big maestro Charles Siani in San Francisco who was principal bassist of the opera. And we did a lot of Marcello sonatas, too, bass versions of the cello suite, a lot of stuff. And then when I went to L.A., Abe Luboff taught me for two years, Abe tutored me to death with every etude book imaginable. All the Simandl stuff, Hrabe. Nanny, Kreutzer, you name it. Every etude book. Before that, with Siani, we did a lot of the Billè book, which is the Italian method, and some Bach and Marcello sonatas. Those things teach us a lot because the foundation I got in terms of learning how to finger everything on the instrument, all the scale sounds, at least the basic ones in classical music they don't use as many scales as we do in jazz, arpeggios, millions of etudes, taught me to have intelligent fingering so I could deal with those difficult passages that would come later in my life playing with people like Chick and playing in the studios and also playing solos and then even playing

a concerto with an orchestra. The Mark-Anthony Turnage concerto, this guy from England is a genius.

*We touched briefly on 'the right place at the right time', to follow up on that spiritual aspect behind a lot of what drives that, what other devices would you say, either musical or otherwise, drive and inspire you to create?*

My faith is huge in my life. I was raised a Catholic and then was trying to get close to God and couldn't even find a way, I'd ask priests pointed questions and they couldn't ever really tell me. So, I wound up getting hired a lot at this church, it was a Covenant church a protestant kind of denomination, this was in Pleasant Hill, California, a church where my brother wound up joining me in the band and then later on he became the music minister, then he became associate pastor at this place. So when I started playing with these guys they would hire me to play at these concerts where there would be all these songs, almost like a musical but then in the middle people would talk about their lives, testimonies, and what happened to them. I was really moved by that. Summer of 1977 I graduated from high school and I became a Christian and my brother did the very same summer through another set of circumstances. That became a huge driving force, it changed my life, it changed a lot of things. I like to read, study, theology. In terms of things where I like to stretch my brain and my heart, the two great areas are theology and music where I get to go deeper into things that you have to sit and think about. Whether it's theology or in music like puzzles, harmonic puzzles and rhythmic puzzles and things that happen in music when I'm composing or interpreting other people's music; that's how I'm built. I'm not good at math even though they say you

have to be good at math to be able to do the musical math that I do. So that's okay with me, I'm good at musical math, but I did get an A in Algebra! All the other math I struggled with a lot, so I've never really considered myself a good mathematical person.

Yet, for music, it works really well. I'm able to see things and bend them around and it's fun for me. Music is driven by my spiritual life, also my family, all the travelling I've done, all the things I've seen in the world, the nature part of it and also just the beautiful cities. Since I was a city kid at first anyway, growing up in Brooklyn we always lived not far from the city. We lived in the suburbs of the Bay Area, and we live in Brooklyn, that was the city, maybe not New York City but it was very citified. In the Bay Area we used to drive into the city a lot and then I lived in L.A. and then I lived all over that city. And then I moved back to the East Coast because of Michal Brecker and other people and my wife really was the driving force of mine. My wife of now twenty-five years. I was married earlier in my life and too and it didn't work out too well. I think, for me, I was – and I try to tell other young musicians – don't be in a hurry to grow up too fast. I was. I wanted to just settle down and have a family, I wasn't one of those crazy musicians who was wild and wanted to play the field and all that. And it didn't work out, I was too young, wasn't even ready for it even. I hung in there because of my faith for nine and a half years and then she finally left. It was kind of one of those things, and I learned the hard way. Stumbled around in the dark for a little time and then my wife found me. And twenty-five years later and two daughters who are grown, they're an inspiration, too. Huge inspiration to me! And I like to read, I read a lot, I've always read a lot.

Not just theology but also literature, poetry and different things, also a lot about African American culture because I was crafted into that at an early age so I love reading about that and I'm very passionate about that and actively involved in my church in Racial Reconciliation Ministries and different things. It's really important to me. Just inspired by that culture, the incredible geniuses that I've been around all my life. In all the ethnicities, the African American culture, the Latino culture, all kinds from different countries, the West African culture, all those great bass players. I did some collaboration with Armand Sabal-Lecco on a record called "Another World," that was my record that – man, that was really fun, West African music is amazing. And Brazilian music, Venezuelan music, Puerto Rican music, Cuban music, Panamanian music, all that kind of stuff really inspires me a lot.

*That was actually going to be a follow-up/side-question that I had to that one. "Did you find yourself borrowing from any particular styles?", but it seems fairly well rounded.*

Well, I kept running into people, like in L.A. I remember I got to be good friends with Alex Acuña and he taught me a lot, and Abraham Laboriel, but also we went to the same church. Then I also wound up, because of Joe Farrell, playing with Airto, he taught me all about how to play Brazilian music. Then, word gets around that I want to play with all these Brazilians and I really love that music. I've come back to it a number of times in my recorded life with my own records, I just love it!

*So, I guess to steer back into the world of extended-range bass – I could go on for that for hours, but anyway – Where do you see the extended-range bass's future, or what do you hope to see?*

It's hard to say, young people will pick it up and try doing things. Some people are fooling around with a seven string. My old buddy Melvin Davis, who I knew when I was about eighteen or nineteen at a jam session in southern California, he later on got a six after me and then he also got a seven. I didn't feel the need to go seven, six is plenty for me. I think it's become – for a while there it was becoming quite mainstream, like you'd see a country band on TV and the guy would have a six string, and I think after a while there was a backlash, people started hating on it, it doesn't matter how many strings you have on your bass, its who's holding the bass and what they're doing musically with it. You could play a one string bass, I don't care what you play, it's all in the person holding the instrument. I think that's sometimes really – I don't like when people just dismiss it. Part of that is because some of the people who picked it up didn't have a musical reason, they just wanted to go crazy. So, when I came back from New York, it was funny, I didn't have a problem because people knew, and I knew a lot of people, they knew that I would play bass no matter whether I had four, or five, or six strings under my fingers. They knew that I would be disciplined enough to try to put the music first rather than whatever bass lick somebody was thinking about playing. That's the thing that I think maybe as has time gone by maybe more people are assimilating more in a musical way. I still really love playing four-string and five-string and in my studio, I use all kinds of different instruments, people send me stuff. I have all kinds of basses and I love them for what they do. That was the thing about being in L.A. all those

years doing studio work, you learn that you needed many different tools, different sounds, but you never knew when it would be the right one. Hopefully people will play whatever it is with maturity and putting the music first. There will always be people doing some interesting things technically on the instrument, and that's cool that the instrument moves forward in certain ways but not at the expense of musicality.

I don't consider myself – I wasn't a prodigy at twelve, nobody knew who the heck I was really until Chick. I was getting a name in the studios in L.A. with jazz people, but it wasn't until I was twenty-five that Chick took me all around the world, and had a solo record, and then I got to make sixteen more of them! And that's kind of miraculous to me, 'cause I remember when I didn't think I was going to have one. Chick really changed things for me. That first one was amazing because I wouldn't have had that deal, he made them sign me, they wanted to sign Eric (*Marienthal)* because Eric was a saxophone player and when Chick's band came on GRP (Grusin-Rosen Productions) they said "Yeah, we'd like to sign him" because they were going to go more on the Pop angle with him and do some stuff and Chick said "Well, you can sign him, but you have to sign the bass player, too" and they were like "Well, we want to hear demos," Chick said "Oh, you'll hear the record when its finished.", they said "You'll produce it with him", and he said "Yeah, I will." So, then he came to me and said "Look, they want me to help produce you, but all that means is I'm going to help you in any way you need, and I'll teach you how to make records. I know you're writing, and you have all this music and you're ready to go. I'll help you learn about budgeting and putting it together to make it so the music can get to the highest place and you can facilitate it by being organized," and all that.

And then I asked him, “Well, would you play on it?” and he said “Of course!” That record was like Christmas for me, it was like a dream come true and I could call the people that I wanted, and it was a decent budget in those days, believe it or not. That record sold over 100,000 copies in the world at a certain point, and I don’t even know, it’s probably selling even more now of course. People seem to know that record, sometimes it’s sad as an artist, you do fifteen more and they only talk about the first. That’s what Chick warned me after that record ‘cause that record did really well, it was number one on Billboard, it was nominated for a Grammy and all this stuff. And he said, “Just remember this, you’ll probably do a lot of records but don’t let it get to you that people keep coming to you for your whole life and going ‘Yeah, man, but that first one’!” At least there was one that they like!

*I think that actually answered a couple of these other questions! One was “What was the deciding factor for your initial pursuit of extended-range?”, but we talked about working with Chick. So, when you first brought the six-string bass into its first session, what was the general reaction to the instrument from the band?*

You’ve got to remember that Dave Weckl had already been playing with Anthony Jackson, so he was no stranger to the instrument. Chick liked the idea, and he liked the possibilities and everything and he was really patient because early on I get the bass before we go into rehearsal for the first big tour, so I’m hitting the B-string when I want to hit the E and I’m making some clams, they were really patient ‘cause they liked the sound of it and they saw that I was taking to the instrument. And I also had another instrument, a four, there, if a tune was just – I couldn’t get it together yet.

And even early on, if you see some of those old videos, I had a stand sometimes where I'd put the – they made this cool stand that sometimes, unfortunately I threw it away at some point, they manufactured a metal stand that had a holder, and the six-string would be on there, and I'd hit a pedal and I'd have the bass around my neck for slapping and other things, and then I'd walk up to the bass, hit the button, and play it for the stuff and then it was also for "Got A Match?" and other things I would take it off the stand and play it. I kind of thought it was a baptism by fire, if I'm going to play this instrument, I'm going to go all the way in there. I did have the other one around for certain things, obviously, but I was in my room for hours doing all those tours, and we would do two months in Europe, you know, we did a lot of gigs, so I had a lot of chances to practice in my room, and at soundcheck, and on the gig to develop playing that instrument. But it was good! It really motivated me to just jump in there.

*From a writing perspective, when writing for the instrument as a solo instrument, for "Our Family" for example, were there any sort of stylistic approaches that you tended to favor to showcase what the bass could do?*

Well, that one was influenced by all the Brazilian music that I'd been playing. That's why the voicings and the little things and the groove, it's a mixture actually. Chick was coming at it more from Afro-Cuban the way he programmed the little percussion thing on the synth. So, his drum part sounds more of a hybrid, and I'm playing more of a Brazilian guitar with the voicings and things like that. I had a lot of time in hotel rooms to find voicings, 'cause from the years of 1985-95, I was with Chick – that was my first priority, and we toured a lot, and I started playing not only with the electric band but then

we had the trio, and then later right before I left to do my own thing and then later on went with Wayne. In ’95 I left, and we had been playing with a quartet with Bob Berg and Gary Novak, there’s a record called Time Warp which has really cool writing, that band toured a lot too in like ’94 or ‘95. The influence came from guitar also because my brother is a guitar player and I grew up heavily influenced by Wes Montgomery and Todd Schofield, Metheny, all kinds of players.

*Are there any players in particular that you see as the “next generation” of extended-range players? And for those who just picked up the instrument, what advice would you have for them?*

There’s some guys in the gospel scene that are killing it. There’s a guy who teaches at Berklee who is really good, Chris Loftlin. There are other guys that he’s shown me that are really good. There’s so many. I think Andrew Gouche, another big gospel player, he’s done a lot of things. But as far as new guys, Melvin Davis I know was right there doing stuff on the six. As far as the young guys, Thundercat is obviously very talented. When people ask me this question I always space out and then after we’re done three hours later, I’ll have all the names. I love all those guys that you hear now, like Bubby Lewis and Adam Blackstone, there’s a ton of guys. Also Mike Elizondo, he’s a great musician. In fact, when I left L.A., I sold him, really cheap, a Sadowsky five-string and it wound up being the bass that he played on all those Dr. Dre hits. Teymur Phell is another good one, he can play some six-string. Mike Pope, he’s been around a little while, very strong player. Yeah, though, besides Thundercat I don’t know of many younger guys playing a six. I’m sure they’re out there but I don’t know them yet. Most of

the young guys that I hear are great, but they play mostly a four or a five. There'll be more.

*Do you have any advice for those that are just now starting to explore extended-range?*

They just have to experiment and figure out why they're doing it too, first of all. Why are they doing it? For me I had a specific reason. It wasn't just that I wanted to be the new kid on the block with a six-string or whatever, it wasn't really the deal. A lot of people were saying at that time, "Don't do it! You're going to get tendonitis! You're going to hurt yourself!" and all that stuff. There was a lot of negative feeling towards it. I just did it because I knew musically it was a direction that I had to explore. So they should ask themselves "Why do I want to do it? Is there music that I'm going to be involved in that it would be right for?" That's a good question.

*As far as your signature models go that you've made with Yamaha, were there any design aspects that were particularly difficult to perfect or overcome?*

The six-strings that we had made for years, particularly the red and the butterscotch one that had been out for twenty years now, that was a big success 'cause Ken Dapron, who's been R&D and Artist Relations for Yamaha with me for years, we actually designed the pre-amp in that bass together. That's one where they actually let me design the preamp with him. And there was a little cutaway if you slap, and just different things about it, using the bolt on system, which I think is great. It all worked out really well. What was difficult was when we started experimenting with the semi-hollows, but there was this kid who was really gifted, he made me those two really nice semi-hollows

that I have. The Big One, he knocked it out of the park on the first try. That bass is magic, that bass sounds huge, I mean you can record with it and people don't even know it's a six-string. But we had to go back and forth a little bit because I wanted to have that extra D to go all the way up to D, and he said we couldn't do it because of the cutaway, so we made it a C. But the sound of that instrument is special to me.

Then it took us a little while, we wanted to make a smaller, lighter one and that took more time. It's not going to sound like the big one, that big one is singularly ridiculous, but this smaller one there was some trial and error and then we got one. I wasn't even sure how to maximize it for a while, I had to learn how to play it differently. I had to use a lighter C-string so that it would ring more. The big, huge one, you could put your note anywhere on that one and the note just rings! This other one, because its chamber was different, the other one has this big, solid mahogany block inside the instrument. So, it's almost like a double bass, it has like a bass bar inside. With the little one, he did a very good job! These two new basses have Agular pickups and preamps in them, so it's like a joint venture. They both have a lot of flexibility, and that small one, if you roll up to just the front pickup it sounds almost like a P-Bass! I've found some sounds in that, it took me a while, though, I had to adjust to that. 'Cause you got to understand I played that solid body for twenty years.

References

Achard, Ken. n.d. 1990. *The History and Development of the American Guitar*. Connecticut: The Bold Strummer Ltd.

Bacon, Tony. 2016. *The Bass Book: A Complete Illustrated History of Bass Guitars*. Maryland: Backbeat Books.

Barber, Berg, Johnson. 1983. Liner notes to *Tricycle*. Flim & the BB's, DMP DT-443, DAT, 1983.

Bass Musician. 2016. "Living Legends of the Extended Range Bass." *Bass Musician Magazine*, December 2016. https://bassmusicianmagazine.com/2016/11/living-legends-of-the-extended-range-bass-bass-musician-magazine-december-2016-issue/

Black, J.W., Albert Molinaro. 2001. *The Fender Bass: An Illustrated History*. New York: Hal Leonard Publishing.

Brown, Corey. 2017. "Victor Wooten: FretTraX MIDI Bass Demo." Accessed September 25, 2020. https://www.notreble.com/buzz/2017/07/24/victor-wooten-frettrax-midi-bass-demo/

Ferguson, Jim. 1986. "Anthony Jackson." *Guitar Player Magazine*, January 1986.

Fodera Guitars. n.d. "History." Accessed October 25, 2020. https://fodera.com/pages/history.

Höfner. n.d. "A Short History of the Höfner 500/1 Violin Bass." Accessed September 25, 2020. https://www.hofner.com/violin_bass_history.

Jisi, Chris. 2008. "Contrabass Conception: Anthony Jackson's Journey to 6-string Supremacy." *Bass Player Magazine*, December 2008.

Johnson, Brent-Anthony. 2019. "Robert Anthony 'Tony' Bunn – Prime Mover." *Bass Frontiers Magazine*, September 19, 2009. http://www.bassfrontiersmag.com /robert-anthony-%E2%80%9Ctony%E2%80%9D-bunn-%E2%80%93-prime-mover.

Michael Tobias Design. n.d. "History: A Future Set in Wood." Accessed September 25, 2020. http://www.mtdbass.com/about.

Moseley, Willie. 2004. “Gibson 1938 Electric Bass: Likely The First!.” *Vintage Guitar Magazine*, January 2004. https://www.vintageguitar.com/2006/gibson-1938-electric-bass/.

Mulhern, Tom. 1985. “Carl Thompson’s Custom Basses.” *Guitar Player Magazine*, March 1985. https://ctbasses.com/guitar-player-magazine-march-1985.

Owens, Jeff. n.d. “Jaco, Geddy and Flea Can't Be Wrong: The Story of the Jazz Bass.” Accessed September 25, 2020. https://www.fender.com/articles/gear/jaco-geddy-and-flea-cant-be-wrong-the-story-of-the-jazz-bass.

———. n.d. “Legendary Lows: The Precision Bass Story.” Accessed September 25, 2020. https://www.fender.com/articles/gear/legendary-lows-the-precision-bass-story.

———. n.d. “The One That Started It All: A Telecaster History.” Accessed September 25, 2020. https://www.fender.com/articles/gear/the-one-that-started-it-all-a-telecaster-history.

Port, Ian. 2019. *The Birth of Loud: Leo Fender, Les Paul, and the Guitar-Pioneering Rivalry that Shaped Rock ‘n’ Roll*. New York: Scribner.

Portugal, Joy. 2000. “Carl Thompson - The Evolution of a Bass Maker.” *Allegro*, October 27, 2000. https://www.local802afm.org/allegro/articles/carl-thompson-the-evolution-of-a-bass-maker.

Resnicoff, Matt. 1989. “Holding it down for Holdsworth: Jimmy Johnson’s bass concept.” *Guitar World*, May 1989. http://www.fingerprintsweb.net/ah/press/gw0589jj.html.

Rickenbacker. n.d. “The Earliest Days of the Electric Guitar.” Accessed September 25, 2020. http://www.rickenbacker.com/history_early.asp.

Roberts, Jim. 2001. *How the Fender Bass Changed the World*. Maryland: Backbeat Books.

———. 2003. *American Basses: An Illustrated History & Player’s Guide.* Maryland: Backbeat Books.

———. 2019. “Partners: Anthony Jackson & Fodera Guitars.” *Bass Magazine*, July 23, 2019. https://bassmagazine.com/artists/partners-anthony-jackson-fodera-Guitars.

———. 2019. “Partners: John Patitucci & Yamaha.” *Bass Magazine*. December 1, 2019. https://bassmagazine.com/artists/partners-john-patitucci-yamaha.

Rogers, Dave. 2015. “Vintage Vault: 1958 Gibson EB-1.” *Premier Guitar Magazine*, March 2015. https://www.premierguitar.com/articles/22257-vintage-vault-1958-gibson-eb-1.

Serbe, Vic. 2013. “Anthony Jackson The Dream Becomes Real...Again.” *Bass Gear*, Fall 2013. https://epublish.panaprint.com/article/Player_Interview/1585477/187956/article.html.

Smith, Ken. n.d. “About.” Accessed October 25, 2020. http://www.kensmithbasses.com/about.

Thompson, Carl. n.d. “Carl Thompson | Fine Handmade Instruments.” Accessed October 25, 2020. https://ctbasses.com.

———. n.d. “PJ | Carl Thompson | Fine Handmade Instruments.” Accessed October 25, 2020. https://ctbasses.com/players/pj.

Tutmarc, Bud. n.d. “The True Facts on the Invention of the Electric Guitar and Electric Bass.” Accessed September 25, 2020. http://tutmarc.tripod.com/paultutmarc.html.

Vintage Guitar and Bass. n.d. “Rickenbacker 4000 Bass.” Accessed September 25, 2020. https://www.vintageguitarandbass.com/rickenbacker/bass/4000.php.

Wickersham, Susan. n.d. “Alembic History.” Accessed October 25, 2020. http://www.alembic.com/family/history.html.